ARK-3383

Seven USB 2.0, Four Serial, Dual LAN and AC97 Audio Fanless Embedded Box Computer

User Manual

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

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2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Technical Support and Assistance

Step 1.

Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.

Step 2.

Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance.

Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

ARK-3383 Series Model

There are two sub-models in ARK-3383 series listed below:

ARK-3383 Model list

Model Number	Description
ARK-3383-2S0A2E	ULV Celeron® M 1.0 GHz Embedded Box Computer, with 1 x VGA, 1 x LVDS, 2 x LAN, 4 x COM, 7 x USB 2.0 and AC97 Audio
ARK-3383-2S4A2E	LV Pentium® M 1.4 GHz Embedded Box Computer, with 1 x VGA, 1 x LVDS, 2 x LAN, 4 x COM, 7 x USB 2.0 and AC97 Audio

Packing list

- 1 x ARK-3383 Unit
- 1 x DIN-Rail Mounting Kit
- 1 x PS2 Keyboard/Mouse Cable (P/N: 1700060202)
- 1 x Driver and Utility CD for ARK-3383 series (P/N: 2066338300)
- 1 x Flat Cable Supports RS-485/RS-422 Mode for COM2 Serial Port (P/N: 1700001967)
- 1 x 2-P Phoenix to DC-Jack Power Cable (P/N: 1700001394)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

Safety Instructions

1. Please read these safety instructions carefully.
2. Please keep this User‘s Manual for later reference.
3. Please disconnect this equipment from AC outlet before cleaning. Use a damp cloth. Don‘t use liquid or sprayed detergent for cleaning. Use moisture sheet or clothe for cleaning.
4. For plugable equipment, the socket-outlet shall near the equipment and shall be easily accessible.

5. Please keep this equipment from humidity.

6. Lay this equipment on a reliable surface when install. A drop or fall could cause injury.

7. Do not leave this equipment in an uncontrolled environment; storage temperatures above 60ºC may damage the equipment.

8. The openings on the enclosure are for air convection hence protecting the equipment from overheating. DO NOT COVER THE OPENINGS.

9. Make sure the voltage of the power source when connecting the equipment to the power outlet.

10. Place the power cord such a way that people cannot step on it. Do not place anything over the power cord. The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.

11. All cautions and warnings on the equipment should be noted.

12. If the equipment is not used for long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.

13. Never pour any liquid into ventilation openings; this could cause fire or electrical shock.

14. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

15. If one of the following situations arise, get the equipment checked by service personnel:

a. The Power cord or plug is damaged.

b. Liquid has penetrated the equipment.

c. The equipment has been exposed to moisture.

d. The equipment has not worked well or you can not get it work according to user‘s manual.

e. The equipment has been dropped and damaged.

f. The equipment has obvious signs of breakage

Caution!

THIS COMPUTER IS PROVIDED WITH A BATTERY-POWERED REAL-TIME CLOCK CIRCUIT. THERE IS A DANGER OF EXPLOSION IF THE BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH SAME OR EQUIVLENT TYPE RECOMMENDED BY THE MANUFACTURE. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.

13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    - Netzkabel oder Netzstecker sind beschädigt.
    - Flüssigkeit ist in das Gerät eingedrungen.
    - Das Gerät war Feuchtigkeit ausgesetzt.
    - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
15. VOSICHT: Explisionsgefahr bei unsachgemaben Austausch der Batterie.Ersatz nur durch densellben order einem vom Hersteller empfohlene-mahnlichen Typ. Entsorgung gebrauchter Batterien navh Angaben des Herstellers.
16. ACHTUNG: Es besteht die Explosionsgefahr, falls die Batterie auf nicht fach-männische Weise gewechselt wird. Verfangen Sie die Batterie nur gleicher oder entsprechender Type, wie vom Hersteller empfohlen. Entsorgen Sie Batterien nach Anweisung des Herstellers.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

Haftungsausschluss: Die Bedienungsanleitungen wurden entsprechend der IEC-704-1 erstellt. Advantech lehnt jegliche Verantwortung für die Richtigkeit der in diesem Zusammenhang getätigten Aussagen ab.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

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CHAPTER 1

Overview

This chapter gives background information on the ARK-3383. It shows you the ARK-3383 overview and specifications.

Sections include:

- Introduction
- Hardware Specifications
- Chassis Dimension

Chapter 1 Overview

1.1 Introduction

The ARK-3383 fanless Embedded Box Computer combines seven USB 2.0 ports, four 4 serial ports, dual fast Ethernet and AC97 audio as well as other industrial features into a rugged, compact Aluminum chassis for intensive control and communication based applications. The fanless operation provides noise protection for the platform to be deployed in external environments. The ARK-3383 Embedded Box Computer is ideally suited for diverse embedded and standalone applications, all electronics are protected in a compact sealed housing.

1.2 Features

1.2.1 Seven USB Ports and Four Serial Ports with Dual Fast Ethernet

- ARK-3383 enables you to access USB peripherals such as storage subsystems, security ID devices, card readers, bar code scanners, multifunction printers and scanners individually dedicated or shared among users and configured via the network to maximize your USB device investment.
- In addition to seven USB 2.0 ports, ARK-3383 is also equipped with dual fast Ethernet and four serial ports that make ARK-3383 an ideal solution to communicate with many field level devices and perform control operations for automation applications, such as embedded device servers for storage, image printing, medical applications and security & access control for POI/POS/Kiosks.

1.2.2 Highly Scalable Performance with low power consumption

- Scalable Low Voltage and Ultra Low Voltage Pentium® M class processors bring high computing performance with low power consumption

1.2.3 Highly Robust Casting Construction

- Fanless operation in an Aluminum sealed construction
- A special cushioned design that absorbs vibration ensures maximum reliability under harsh conditions

1.2.4 Highly Compact Size

- With its maximum mounting height of 69mm, the ARK-3383 can be used under space critical installation conditions.

1.2.5 Optimized Integration

- Few parts, easy integration, and easy maintenance to reduce investment
- Systems are supplied ready to run
- Long life cycle support for product continuity

1.2.6 Accepts Wide Range of DC Power Input, and ATX

- The ARK-3383 allows a wide range power input of DC 12 V ~ 24 V, and also supports ATX; that offers system integrators the flexibility and excellent power management for various embedded application environments.

1.3 Hardware Specification

1.3.1 Processor Core Logic System

- **CPU**

  Intel® Ultra Low Voltage Celeron® M or Intel® Low Voltage Pentium® M Processor, µFC-BGA 479 Package:

  • ULV Celeron® M 1.0 GHz (for Model of ARK-3383-2S0A2E)

  • LV Pentium® M 1.4 GHz (for Model of ARK-3383-2S4A2E)

- **System Chipset**

  • Intel® 852GM or Intel® 855GME Graphic Memory Controller Hub (GMCH) Chipset:

  - Intel® 852GM for model of ARK-3383-2S0A2E

  - Intel® 855GME for model of ARK-3383-2S4A2E

  • Intel® FW82801DB I/O Controller Hub (ICH4) Chipset

  • 400 MHz FSB

- **BIOS:** 4Mbit Flash BIOS, supports Plug & Play
- **Power Management:** Supports ATX, APM Rev 1.2 and ACPI
- **System Memory**

  • One 200 pin SO-DIMM socket

  • Supports DDR SDRAM Up to 1GB

1.3.2 Display

- **Chipset:**

  • Integrated built-in graphics Intel® 852GM GMCH, or Intel® 855GME GMCH chipsets utilizing Intel® Extreme Graphics 2 technology

- **Display Memory:**

  • Dynamic video memory allocation up to 64 MB

- **Display Interface support:**

  • CRT Interface

  • 36-bit LVDS interface

1.3.3 Ethernet

- **Dual Ethernet Controller:** Two Intel® 82551QM Ethernet Controllers support LAN1 and LAN2
- **Speed:** 10/100 Mbps, IEEE 802.3u (100 BASE-T) protocol compatible

1.3.4 USB

- **Dual USB Controller supports 7 USB 2.0 ports:**

  • Integrated USB 2.0 controller built-in ICH4 chipset supports USB 0 ~ USB 2

  • One NEC uD720101 PCI USB 2.0 controller supports USB 3 ~ USB 6

1.3.5 Audio

• Audio controller on the ICH4 chip.

• AC97 stereo sound, dual 2.2 W amplifier

1.3.6 Serial Port

- **Serial Interface:**

  • Built-in Winbond 83627HF super I/O controller supports:

  COM1: Full functional RS-232 serial port

  COM2: RS-232/422/485 serial port, by system internal jumper selection

  Note: The default setting of COM2 is RS-232. The RS-422/485 mode of COM2 can be supported via replacing the internal cable and adjusting the jumper inside the system.

  • Built-in SMSC SCH3114 LPC serial port controller supports:

COM3: RS-232/422/485 serial port, by BIOS selection and setup

COM4: RS-232/422/485 serial port, by BIOS selection and setup

1.3.7 Other

• **Watchdog Timer:** 255 levels timer interval, setup by software

• **Keyboard/Mouse:** One PS/2 port to support PS/2 mouse and PS/2 Keyboard

1.3.8 Storage

• Supports a drive bay space for 2.5" HDD

• Supports a Compact Flash socket for Type I/II Compact Flash disk

1.3.9 Mechanical

• **Construction:** Aluminum housing

• **Mounting:** DIN-rail mounting, Desk/wall mounting

• **Dimension (W x H x D):** 264.5 mm x 69.2 mm x 137.25 mm (10.41"x 2.72"x 4.4")

• **Weight:** 2 KG

1.3.10 Power Supply

• **Output Rating:** 46 W

• **Fuse Rating:** 7 A @ 125 V

• I**nput Voltage:** 12 VDC ~ 24 VDC,

Typical:

12 VDC @ 4.5 A,

16 VDC @ 3.4 A,

19 VDC @ 2.9 A,

24 VDC @ 2.3 A,

1.3.11 Environment Specifications

- **Operating Temperature:**

  • When System is equipped with industrial grade Compact Flash Disk temperature range is -20 to 60° C

  • When System is equipped with 2.5-inch Hard Disk temperature range is 0 to 45° C

- **Relative humidity:** 95 % @ 40° C (non-condensing)
- **Vibration loading during operation:**

  • When system is equipped with Compact Flash Disk only:

5 Grms, IEC 68-2-64, random, 5~500 Hz, 1 Oct./min, 1hr/axis.

• When system is equipped with 2.5-inch hard disk:

1 Grms, IEC 68-2-64, random, 5~500 Hz, 1 Oct./min, 1hr/axis.

- **Shock during operation:**

  • When system is equipped with Compact Flash Disk only:

  50 Grms, IEC 68-2-27, half sine, 11 ms duration

  • When system is equipped with Hard Disk:

  20 Grms, IEC 68-2-27, half sine, 11 ms duration

- **EMC Approved:** CE, FCC Class A
- **Safety Approved:** UL

1.4 Chassis Dimensions

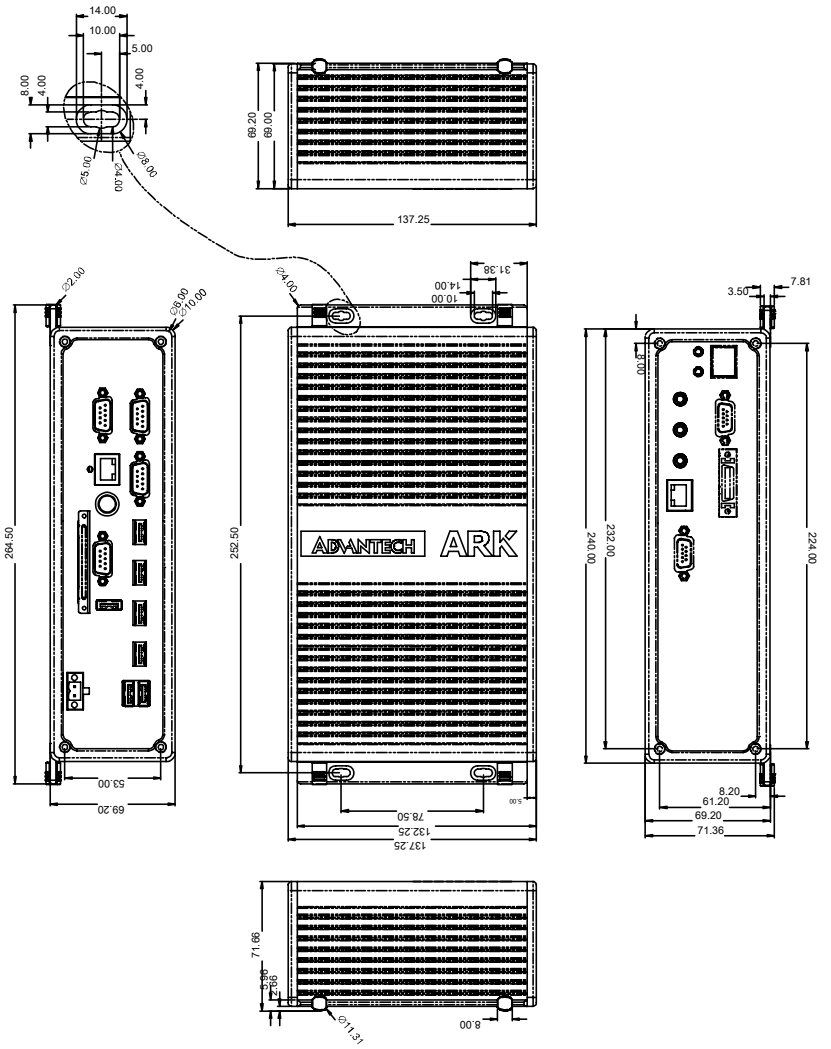


Figure 1.1: Chassis Dimensions

CHAPTER 2

Hardware Functionality

This chapter shows how to set up the ARK-3383's hardware functions, including connecting peripherals, switches and indicators.

Sections include:

- Introduction of ARK-3383 External I/O Connectors
- ARK-3383 front metal faceplate external I/O connectors
- ARK-3383 rear metal faceplate external I/O connectors

Chapter 2 Hardware Functionality

2.1 Introduction of ARK-3383 External I/O Connectors

The following two figures show the external I/O connectors on ARK-3383. The following sections give you detailed information about the functions of each I/O connector.

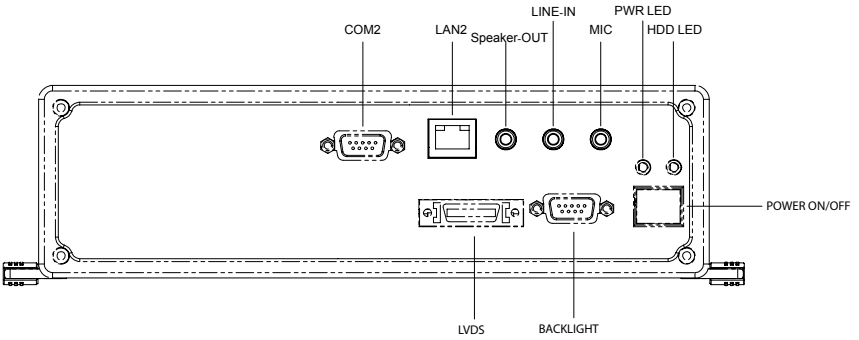


Figure 2.1: ARK-3383 front metal face plate external I/O connectors

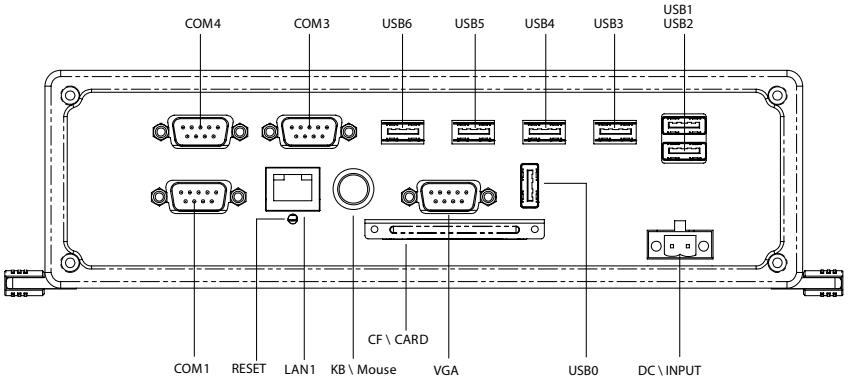


Figure 2.2: ARK-3383 rear metal face plate external I/O connectors

2.2 ARK-3383 front metal faceplate external I/O connectors

2.2.1 Power ON/OFF Button

The ARK-3383 ATX power On/Off button supports dual function Soft Power On/Off (Instant off or Delay 4 Second), and Suspend.

2.2.2 LED Indicators

There are two LEDs on the ARK-3383 faceplate for indicating system status: Flashing Green color is the PWR LED for power status; and the Flashing Red color HDD LED is for hard disk and compact flash disk status.

2.2.3 LVDS Connectors

The ARK-3383 comes with a D-Sub 26-pin connector that carries LVDS signal output, and can directly connect to the LVDS LCD Display via external cable. The system also provides a jumper for JP6 on the internal PCM-9380 or PCM-9386 motherboard for selecting the LCD signal power of 5 V or 3.3 V, please refer to section 3.6 for the jumper table of JP6, and Chapter 8 of "Full disassembly procedure" to set it up. The default setting of JP6 is 5 V.

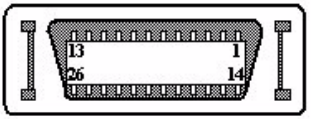


Figure 2.3: LVDS connector

Table 2.1: LVDS Connector Pin Assignment

Pin	Signal name	Pin	Signal name
1	LVDS_CLKBP	14	LVDS_CLKBM
2	GND	15	LVDS_YAM0
3	LVDS_YAP0	16	LVDS_YAM1
4	LVDS_YAP1	17	LVDS_YAM2
5	LVDS_YAP2	18	LVDS_CLKAM
6	LVDS_CLKAP	19	GND
7	+3.3 or +5V	20	+3.3 or +5V
8	GND	21	LVDS_YAM3
9	LVDS_YAP3	22	LVDS_YBM0

Table 2.1: LVDS Connector Pin Assignment			
10	LVDS_YBP0	23	LVDS_YBM1
11	LVDS_YBP1	24	LVDS_YBM2
12	LVDS_YBP2	25	LVDS_YBM3
13	LVDS_YBP3	26	GND

2.2.4 LCD Backlight On/Off control Connector

The ARK-3383 comes with a D-Sub 9-pin connector which provides BKLTEN signal as well as +12 V, +5 V and Ground Pin signals that allow you to connect these signals to an LCD inverter to implement the LCD On/Off control.

- BKLTEN provides signals that the inverter module requires for controlling the on/off
- Provides 12 V, 5 V as the Inverter Power Source.

The additional VBR signal pin should be connected to the LCD's Inverter which allows you to implement brightness adjustments through customer's software utility.

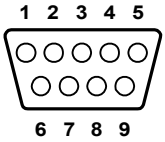


Figure 2.4: LCD Backlight connector

Table 2.2: LCD Backlight Connector Pin Assig	
Pin	Signal name
1	+12V
2	GND
3	BKLTEN
4	VBR
5	+5V
6	LVDS_DCLK
7	LVDS_DDAT
8	Reserved
9	Reserved

2.2.5 Audio Connector

The ARK-3382 offers AC97 stereo Audio output ports through three phone jack connectors of Speaker-Out, Mic-In and Line-In.

Table 2.3: Line_In connector	
Line-In Connector	
Footprint	Phone Jack 3.5Ø 5P, 90 Degree, Female, BLUE color, SHIELDED

Table 2.4: Speaker_Out connector	
Speaker-Out Connector	
Footprint	Phone Jack 3.5Ø 5P, 90 Degree, Female, LIME color, SHIELDED

Table 2.5: Mic_In connector	
Mic-In Connector	
Footprint	Phone Jack 3.5Ø 5P, 90 Degree, Female, PINK color, SHIELDED

2.2.6 Ethernet Connector: LAN2

The ARK-3383 is equipped with two Intel 82551QM Ethernet controllers and two Ethernet ports that are fully compliant with IEEE 802.3u 10/100Base-T CSMA/CD standards. The Ethernet ports provide two standard RJ-45 jack connectors:

LAN1: located on rear faceplate

LAN2: located on front faceplate

Both LAN1 and LAN2 also comes with LED indicators to show their Active/Link status (Green LED) and Speed status (Orange LED).

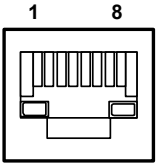


Figure 2.5: Ethernet Connector

Table 2.6: RJ-45 Connector pin assignments	
Pin	10/100BaseT Signal Name
1	XMT+
2	XMT-
3	RCV+

Table 2.6: RJ-45 Connector pin assignments	
4	NC
5	NC
6	RCV-
7	NC
8	NC

2.2.7 COM2 Connector: RS-232/422/485 port

The COM2 serial communication interface port can be configured to support RS-232, RS-422 or RS-485 interface functionality.

The default setting of COM2 is RS-232. The RS-422/485 mode of COM2 can be supported via replacing the system internal COM2 cable with the flat cable, part number 1700001967, and adjusting the jumpers of J3/J4/J5 which are located on the system internal motherboard of the ARK-3383 unit. Please refer to Chapter 3 “Hardware installation and upgrade” and Chapter 8 “Full Disassembly Procedure” to set it up.

The 1700001967 part number is a flat cable which supports RS-485/RS-422 functional mode for the COM2 serial communication interface port. This cable has been stored in the accessory box of the product package; please refer to your product package.

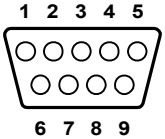


Figure 2.6: COM2 Connector

Table 2.7: COM2 Serial port pin assignments			
	RS-232	RS-422	RS-485
Pin	Signal Name	Signal Name	Signal Name
1	DCD	Tx-	DATA-
2	RxD	Tx+	DATA+
3	TxD	Rx+	NC
4	DTR	Rx-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC

Table 2.7: COM2 Serial port pin assignments			
9	RI	NC	NC

Note: NC represents “No Connection”

2.3 ARK-3383 rear face plate external I/O connectors

2.3.1 Power Input Connector

The ARK-3383 comes with a Phoenix connector that carries 12~24 VDC external power input

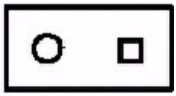


Figure 2.7: Power Input Connector

Table 2.8: Power connector pin assignments	
Pin	Signal Name
1	GND
2	DC +12~24V

2.3.2 USB Connectors (USB0 ~ USB6)

The Rear Metal faceplate of ARK-3383 provides seven USB 2.0 interface connectors: USB 0, USB 1, USB 2, USB 3, USB 4, USB 5 and USB 6; each USB port provides complete Plug & Play and hot swapping for external devices. The USB interface complies with USB UHCI, Rev. 2.0 spec.

The USB connectors are used for connecting any device that conforms to the USB interface. Many recent digital devices conform to this standard. The USB interface supports Plug and Play, which enables you to connect or disconnect a device whenever you want, without turning off the computer.

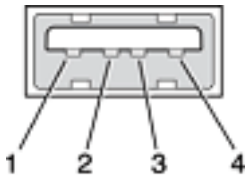


Figure 2.8: USB connector

Table 2.9: USB Connector	
Pin	Signal name
1	VCC
2	USB_P0-
3	USB_P0+
4	GND

2.3.3 VGA Connector

The ARK-3383 provides a high resolution VGA interface by a D-sub 15-pin connector to support a VGA CRT monitor. It supports VGA and VESA, up to 1600 x 1200 @85-Hz resolution and up to 32 MB of shared memory.

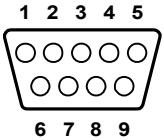


Figure 2.9: VGA connector

Table 2.10: VGA adaptor cable pin assignment					
Pin	Signal name	Pin	Signal name	Pin	Signal name
1	Red	6	GND	11	NC
2	Green	7	GND	12	NC
3	Blue	8	GND	13	H-SYNC
4	NC	9	NC	14	V-SYNC
5	GND	10	GND	15	NC

2.3.4 PS/2 Keyboard/Mouse Connector

The ARK-3383 provides a PS/2 keyboard/mouse connector. A 6-pin mini-DIN connector is located on the rear panel of the ARK-3383. The ARK-3383 comes with an adapter cable to convert from the 6-pin mini-DIN connector to two 6-pin mini-DIN connectors for PS/2 keyboard and PS/2 mouse connection.

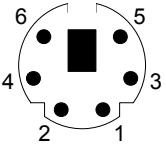


Figure 2.10: P/S2 connector

Table 2.11: PS/2 Keyboard/Mouse connector pin assignments	
Pin	Signal name
1	PS2_KBDAT
2	PS2_MSDAT
3	GND
4	VCC
5	PS2_KBCLK
6	PS2_MSCLK

2.3.5 Ethernet Connector: LAN 1

The ARK-3383 is equipped with two Intel 82551QM Ethernet controllers and two Ethernet ports that are fully compliant with IEEE 802.3u 10/100Base-T CSMA/CD standards. The Ethernet ports provide two standard RJ-45 jack connectors:

LAN1: located on rear faceplate

LAN2: located on front faceplate

Both LAN 1 and LAN 2 come with LED indicators to show their Active/Link status (Green LED) and Speed status (Orange LED).

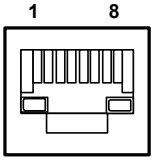


Figure 2.11: Ethernet Connector

Table 2.12: RJ-45 Connector pin assignments	
Pin	10/100BaseT Signal Name
1	XMT+
2	XMT-
3	RCV+
4	NC

Table 2.12: RJ-45 Connector pin assignments	
5	NC
6	RCV-
7	NC
8	NC

2.3.6 Reset Button

Press the "Reset" button to activate the reset function.

2.3.7 COM 1 Connector: Standard RS-232 port

The ARK-3383 provides a D-sub 9-pin connector, which offers one standard RS-232 serial communication interface port of COM 1.

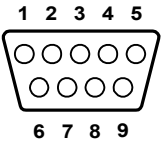


Figure 2.12: COM 1 Connector

Table 2.13: COM1 Serial port pin assignments	
Pin	Signal Name
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

2.3.8 COM 3 Connector: RS-232/422/485 port

The COM 3 serial communication interface port can be configured to support RS-232, RS-422 or RS-485 interface functionality by adjusting the BIOS setting.

The default setting of COM 3 is RS-232. The RS-422/485 mode of COM 3 can be configured via adjusting “COM 3 Mode” of “Integrated Peripherals” at the BIOS setting. Please refer to Chapter 3 “Hardware installation and upgrade” and Chapter 4 “Award BIOS Setup” to select.

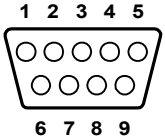


Figure 2.13: COM3 Connector

2.3.9 COM 4 Connector: RS-232/422/485 port

The COM 4 serial communication interface port can be configured to support RS-232, RS-422 or RS-485 interface functionality by adjusting the BIOS setting.

The default setting of COM 4 is RS-232. The RS-422/485 mode of COM 4 can be configured via adjusting “COM 4 Mode” of “Integrated Peripherals” at the BIOS setting. Please refer to Chapter 3 “Hardware installation and upgrade” and Chapter 4 “Award BIOS Setup” to select.

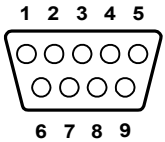


Figure 2.14: COM 4 Connector

CHAPTER 3

Hardware Installation and Upgrade

This chapter introduces how to initialize the ARK-3383.

Sections include:

- Jumpers and Connectors
- Installing the DDR SDRAM Memory Module
- Inserting a Compact Flash Card
- Installing the 2.5" Hard Disk Drive (HDD)
- Connecting Power
- Installing the DIN Rail Mounting

Chapter 3 Hardware Installation and Upgrade

3.1 Jumpers and Connectors

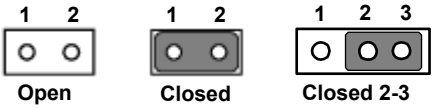
The ARK-3383 Embedded Box Computer consists of a PC-based computer that is housed in an aluminum top cover, a metal bottom case with accessible bottom cover and front/ rear metal faceplates. The HDD, and SDRAM DIMM, are all readily accessible by removing the easily accessible bottom cover. Any maintenance or hardware upgrades can be easily completed after removing the top cover, front and rear metal faceplates. If you are a systems integrator and need to know how to completely disassemble the embedded box computer, you can find more useful information in Chapter 8.

Warning! *Do not remove any mechanical parts, such as the top cover, bottom cover and front/rear faceplates until you have verified that no power is flowing within the Embedded Box Computer. Power must be switched off and the power cord must be unplugged. Every time you service the Embedded Box Computer, you should be aware of this.*

3.2 Setting jumpers

You can configure your ARK-3383 to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either pins 1 and 2 or pins 2 and 3.

The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

3.3 COM 2 RS-232/422/485 Jumper setting (J3/J4/J5 Located on internal motherboard)

The COM 2 port located on front faceplate of ARK-3383 unit which can be configured to operate in RS-232, RS-422 or RS-485 mode by setting up the Jumper Pins of J3/J4/J5 located on internal motherboard of ARK-3383 unit. The default setting of COM 2 is RS-232.

Table 3.1: COM 2 RS-232/422/485 Jumper Select

Function	Setting
RS-232 *	J3 (1-2 closed) (J4, J5 open)
RS-422	J4 (1-2 closed) (J3, J5 open)
RS-485	J5 (1-2 closed) (J3, J4 open)
(*): means default setting of the jumper/function	

Please also refer to Chapter 8 “Full Disassembly Procedure”.

3.4 COM 3 RS-232/422/486 BIOS setting

The COM 3 port connector located on rear face plate of ARK-3383 unit can be configured to operate in RS-232, RS-422 or RS-485 mode by adjusting “COM 3 Mode” of “Integrated Peripherals” at the BIOS setting. Please refer to Chapter 4 “Award BIOS Setup” to select. The default setting value of COM3 has been set for RS-232.

3.5 COM 4 RS-232/422/486 BIOS setting

The COM 4 port connector located on rear face plate of ARK-3383 unit can be configured to operate in RS-232, RS-422 or RS-485 mode by adjusting “COM 4 Mode” of “Integrated Peripherals” at the BIOS setting.

Please refer to Chapter 4 “Award BIOS Setup” to select. The default setting value of COM4 has been set for RS-232.

3.6 LCD Power Jumper Setting (J6)

The ARK-3383 series of embedded box computers provide a jumper-JP6 located on internal PCM-9380 or PCM-9386 motherboard for selecting the LCD signal power of 5 V or 3.3 V. When you connect your LVDS LCD Panel display, you need to set up JP6 for the LCD power setting selection. for your display.

Table 3.2: LCD Power Setting (J6)

Close pins	Function
1-2	+5V*
2-3	+3.3V
(*): means default setting of the jumper/function	

Please also refer to Chapter 8 “Full Disassembly Procedure” to set up. The default setting of J6 is 5 V.

3.7 Installing the DDR SDRAM Memory Module

The ARK-3383 provides one 200-pin SODIMM (Small Outline Dual Inline Memory Module) socket and supports 2.5 V DDR SDRAM. You can install from 64 MB to 1 GB of DDR SDRAM memory. The procedure for installing a DDR SDRAM SODIMM into the ARK-3383 is detailed below, please follow these steps carefully.

- Remove the power cord.
- Unscrew the four screws from the bottom cover of ARK-3383.
- Remove the bottom cover.
- Plug a DDR SDRAM SODIMM into the onboard SODIMM socket.
- Replace the bottom cover with the four screws.

3.8 Installing a Compact Flash Card

The procedure for installing a CompactFlash card into the ARK-3383 is detailed below, please follow these steps carefully.

- Remove the power cord.

- Unscrew the two screws from the CF door located on rear face plate of the ARK-3383 embedded box computer.

Figure 3.1:

- Remove the CF carrier.
- Place a Compact Flash card with your OS or application program into the CF carrier.

Figure 3.2:

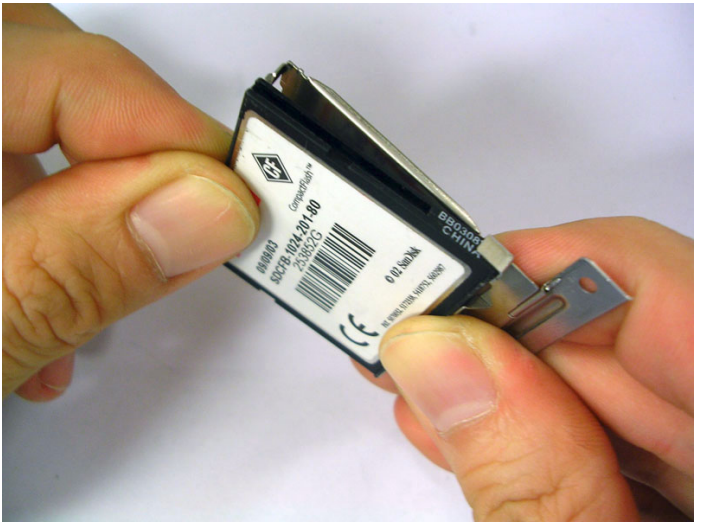


Figure 3.3:

- Insert the CF carrier back and reassemble with the 2 screws to the CF door located on the rear face plate of ARK-3383

Figure 3.4:

Note: The Compact Flash socket is allocated as Secondary IDE Master.

3.9 Installing the 2.5" Hard Disk Drive (HDD)

You can attach one enhanced Integrated Device Electronics (IDE) hard disk drive to the ARK-3383's internal controller which uses a PCI local-bus interface. The advanced IDE controller supports faster data transfer and allows the IDE hard drive to exceed 528 MB. The following are instructions for installation:

- Remove the power cord.
- Unscrew the four screws from bottom cover of the ARK-3383.
- Remove the bottom cover of the ARK-3383.
- Assemble the hard disk to the bottom cover.
- Connect the IDE flat cable to the connector and the hard disk.
- Screw back the bottom cover with the four screws.

3.10 Connecting Power

Connect the ARK-3383 to a 12~24 VDC power source. The power source can either be from a power adapter or an in-house power source.

3.11 Installation of Din Rail Mounting

The procedure for installing the ARK-3383 on the rail is detailed below, please follow these steps carefully.

- Remove the rubber feet from the ARK-3383.

Figure 3.5:

- Find the DIN Rail Mounting Kit in the ARK-3383 accessory box. This kit has 2 pieces: an L DIN Rail Mounting Module (Left) and a R DIN Rail Mounting Module (Right).

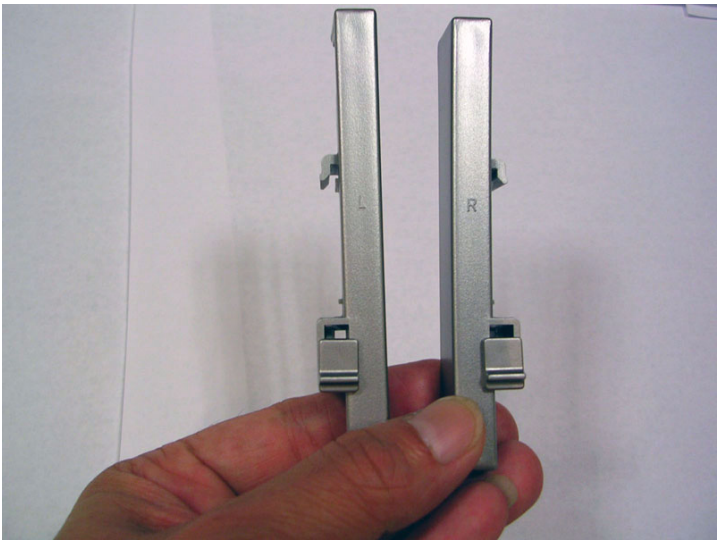


Figure 3.6:

- Attach the L-Din Rail Mounting module and R-Din Rail Mounting module to the ARK-3383 unit.

Figure 3.7:

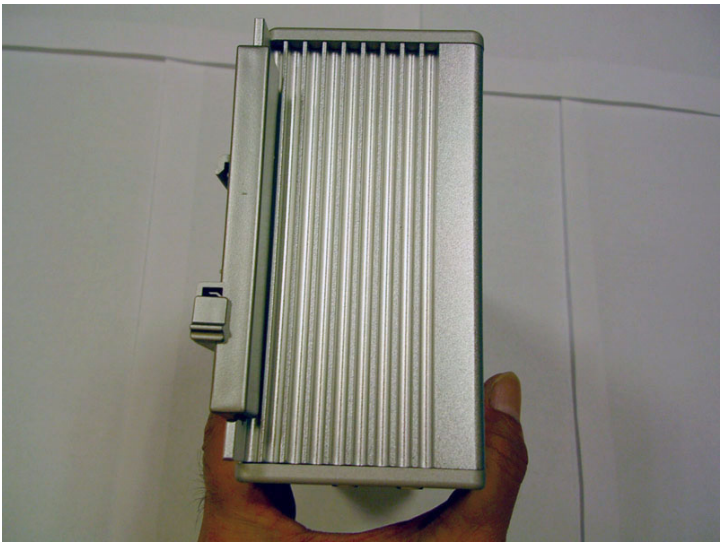


Figure 3.8:

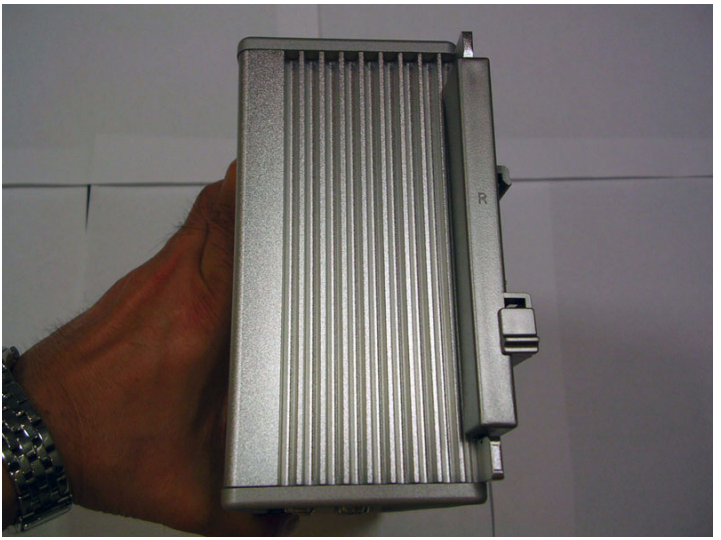


Figure 3.9:

- The sample figure of the DIN-Rail unit as it is below

Figure 3.10:

- Install the ARK-3383 unit to the rail, please make sure the hook of the Din-Rail mounting kit on the ARK-3383 unit will contact with tooth of the DIN-Rail firmly.

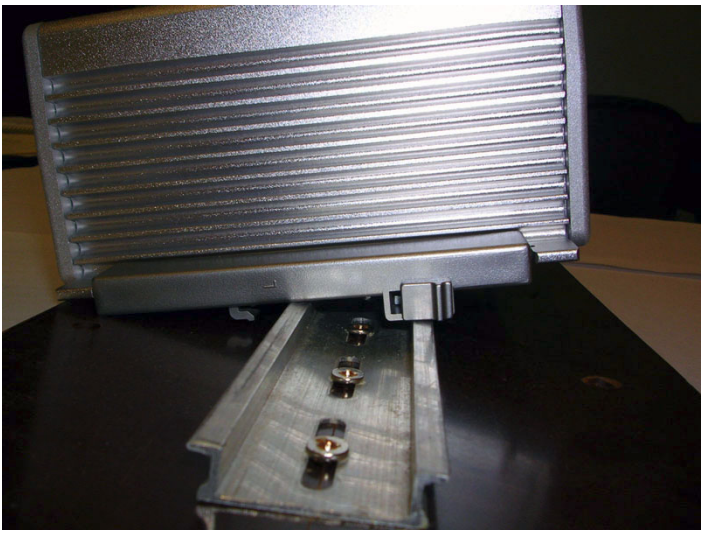


Figure 3.11:

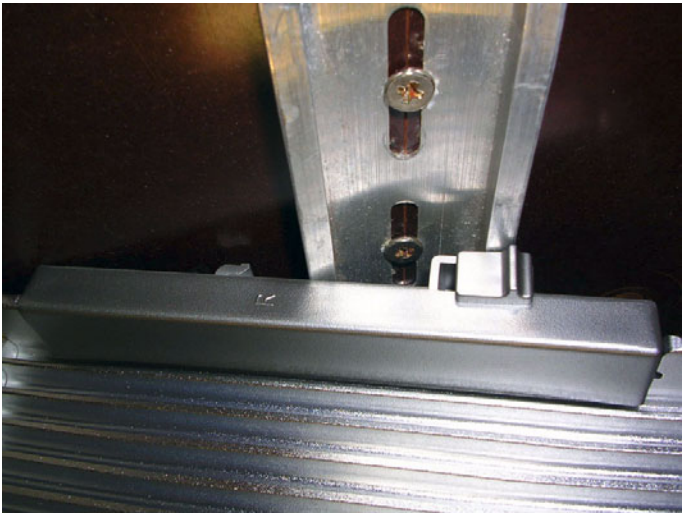


Figure 3.12:

- Push the Hook Switch to fix the mounting between ARK-3383 unit and DIN-Rail.

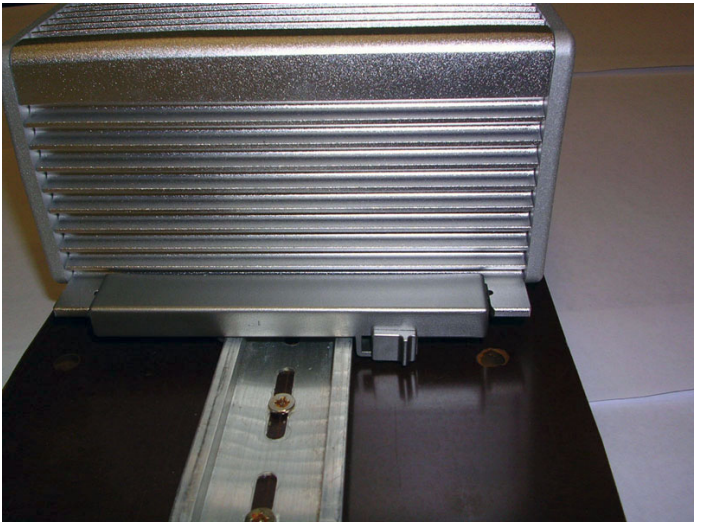


Figure 3.13: Left Side View

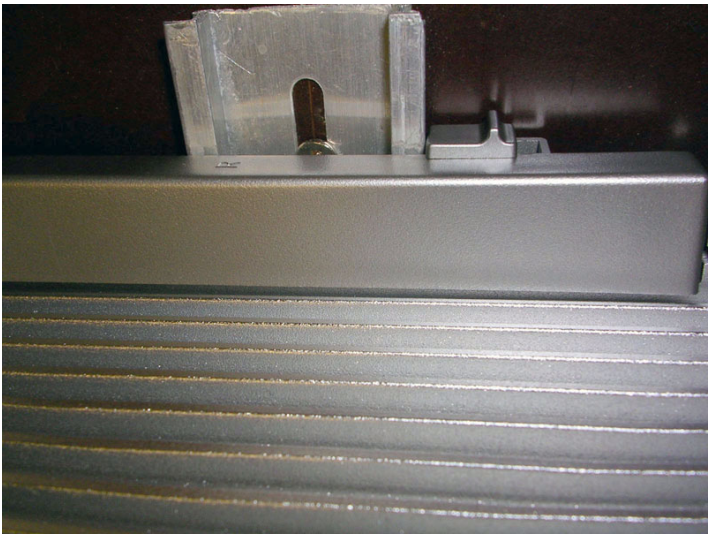


Figure 3.14: Right Side View

- The final Figure shows ARK-3383 unit mounted on the rail with the DIN-Rail mounting kit

Figure 3.15:

CHAPTER 4

Award BIOS Setup

Chapter 4 Award BIOS Setup

4.1 Introduction

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed memory (CMOS RAM) so that it retains the setup information when the power is turned off.

4.1.1 CMOS RAM Auto-backup and Restore

The CMOS RAM is powered by an onboard button cell battery. When you finish BIOS setup, the data in CMOS RAM will be automatically backed up to Flash ROM. If operation in harsh industrial environment causes a soft error, BIOS will recheck the data in CMOS RAM and automatically restore the original data in Flash ROM to CMOS RAM for booting.

Note: If you intend to change the CMOS setting without restoring the previous backup, you have to click on "DEL" within two seconds of the "CMOS checksum error..." display screen message appearing. Then enter the "Setup" screen to modify the data. If the "CMOS checksum error..." message appears again and again, please check to see if you need to replace the battery in your system.

4.2 Entering Setup

Turn on the computer and check for the "patch code". If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact Advantech's applications engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, press <Del> to allow you to enter the setup

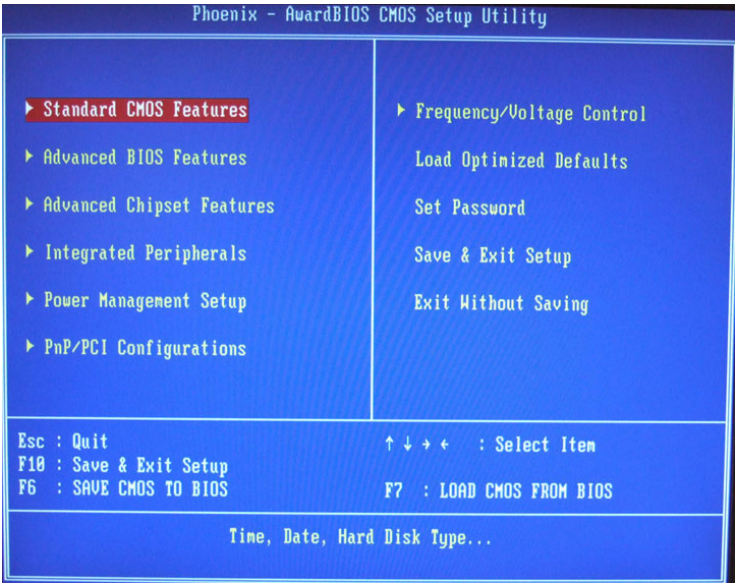


Figure 4.1: Award BIOS Setup initial screen

4.3 Standard CMOS Setup

Choose the “Standard CMOS Features” option from the “Initial Setup Screen” menu, the following screen will be displayed. This menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

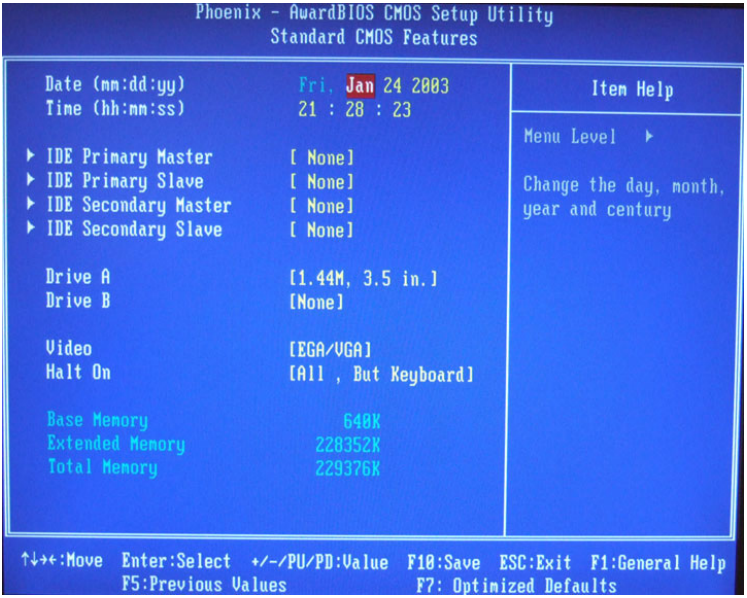


Figure 4.2: Standard CMOS features screen

4.4 Advanced BIOS Features

The “Advanced BIOS Features” screen appears when choosing the item from the “Initial Setup Screen” menu. It allows the user to configure the ARK-3383 according to their particular requirements. Below are some major settings that are provided in the Advanced BIOS Features screen. A quick booting function is provided for your convenience. Simply enable the Quick Booting item to save yourself valuable time

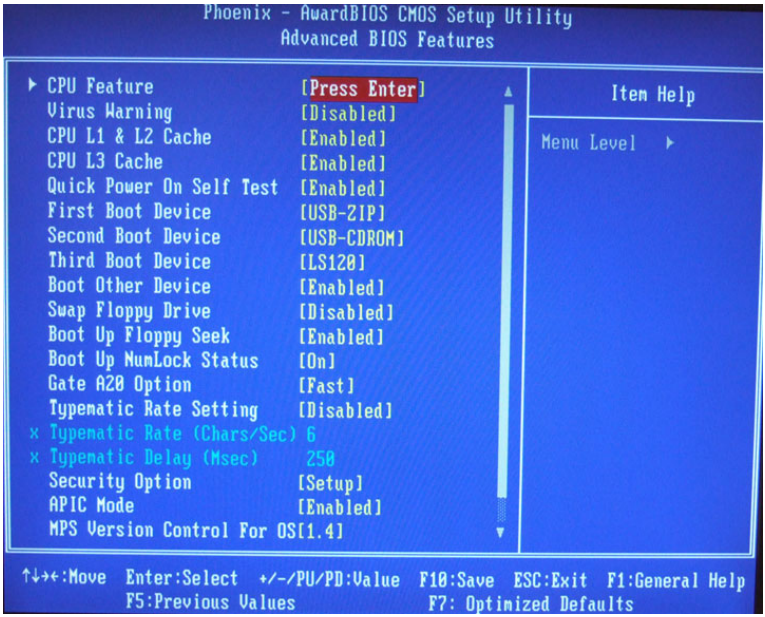


Figure 4.3: Advanced BIOS features screen

4.4.1 CPU Feature

Press Enter to configure the settings relevant to the CPU Feature.

4.4.2 Virus Warning

If enabled, a warning message and alarm beep activates if someone attempts to write here. The commands are “Enabled” or “Disabled.”

4.4.3 CPU L1 & L2 Cache

Enabling this feature speeds up memory access. The commands are “Enabled” or “Disabled.”

4.4.4 Quick Power On Self Test

This option speeds up the Power-On Self Test (POST) conducted as soon as the computer is turned on. When enabled, BIOS shortens or skips some of the items during the test. When disabled, the computer conducts normal POST procedures.

4.4.5 First/Second/Third/ Boot Other Device

The BIOS tries to load the OS with the devices in the sequence selected. Choices are: Floppy, LS/ZIP, HDD, SCSI, CDROM, LAN, Disabled.

4.4.6 Swap Floppy Drive

Logical name assignments of floppy drives can be swapped if there is more than one floppy drive. The commands are “Enabled” or “Disabled.”

4.4.7 Boot UP Floppy Seek

Selecting the command “Disabled” will speed the boot up process. Selecting “Enabled” searches disk drives during boot up.

4.4.8 Boot Up NumLock Status

This feature selects the “power on” state for NumLock. The commands are “Enabled” or “Disabled.”

4.4.9 Gate A20 Option

Normal: A pin in keyboard controller controls Gate A20 Fast (Default): Chipset controls Gate A20.

4.4.10 Typematic Rate Setting

The typematic rate is the rate key strokes repeat as determined by the keyboard controller. The commands are “Enabled” or “Disabled.” Enabling allows the typematic rate and delay to be selected.

4.4.11 Typematic Rate (Chars/Sec)

BIOS accepts the following input values (characters/second) for typematic rate: 6, 8, 10, 12, 15, 20, 24, 30.

4.4.12 Typematic Delay (msec)

Typematic delay is the time interval between the appearance of two consecutive characters, when holding down a key. The input values for this category are: 250, 500, 750, 1000 (msec).

4.4.13 Security Option

This field allows you to limit access to the System and Setup. The default value is Setup. When you select System, the system prompts for the User Password every time you boot up. When you select Setup, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

4.4.14 APIC Mode

APIC stands for Advanced Programmable Interrupt Controller. The default setting is Enabled.

4.4.15 MPS Version Control For OS

This option specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 adds extended configuration tables to improve support for multiple PCI bus configurations and future expand ability. The default setting is 1.4.

4.4.16 OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is Non-OS/2.

4.4.17 Report No FDD For WIN 95

If you are using Windows 95/98 without a floppy disk drive, select Enabled to release IRQ6. This is required to pass Windows 95/98's SCT test. You should also disable the Onboard FDC Controller in the Integrated Peripherals screen when there's no floppy drive in the system. If you set this feature to Disabled, the BIOS will not report the missing floppy drive to Win95/98.

4.4.18 Small Logo (EPA) Show

The EPA logo appears at the right side of the monitor screen when the system is boot up. The default setting is Enabled.

4.5 Advanced Chipset Features

The “Advanced Chipset Features” screen appears when choosing the “Advanced Chipset Features” item from the “Initial Setup Screen” menu. It allows the user to configure the system chipset according to his particular requirements. Below are some major items that are provided in the Advanced Chipset Features screen.

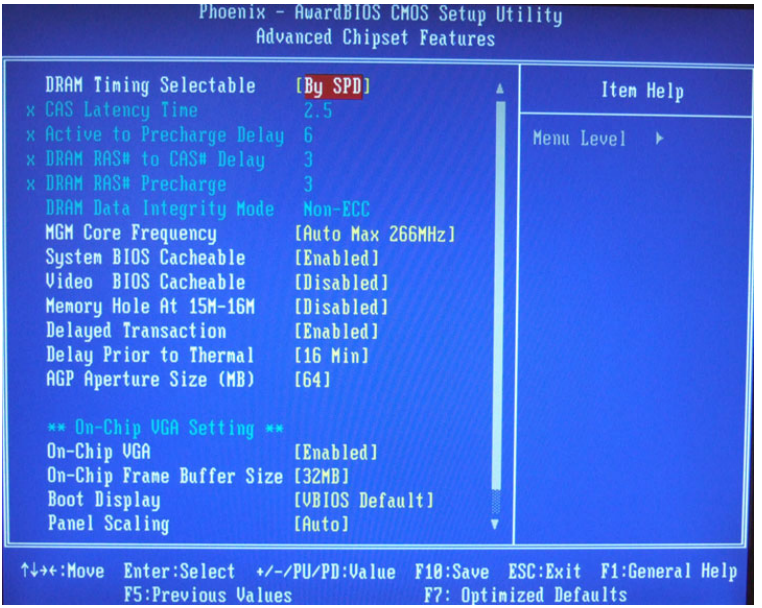


Figure 4.4: Advanced Chipset features screen

4.5.1 DRAM Timing Selectable

This option refers to the method by which the DRAM timing is selected. The default is By SPD.

4.5.2 CAS Latency Time

You can configure CAS latency time in HCLKs as 2 or 2.5 or 3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

4.5.3 Active to Precharge Delay

The default setting for the Active to Precharge Delay is 7.

4.5.4 DRAM RAS# to CAS# Delay

This option allows you to insert a delay between the RAS (Row Address Strobe) and CAS (Column Address Strobe) signals. This delay occurs when the SDRAM is written to, read from or refreshed. Reducing the delay improves the performance of the SDRAM.

4.5.5 DRAM RAS# Precharge

This option sets the number of cycles required for the RAS to accumulate its charge before the SDRAM refreshes. The default setting for the Active to Precharge Delay is 3.

4.5.6 DRAM Data Integrity Mode

Select ECC if your memory module supports it. The memory controller will detect and correct single-bit soft memory errors. The memory controller will also be able to detect double-bit errors though it will not be able to correct them. This provides increased data integrity and system stability.

4.5.7 MGM Core Frequency

This field sets the frequency of the DRAM memory installed. The default setting is Auto Max 266 MHz.

4.5.8 System BIOS Cacheable

Setting "Enabled" allows caching of system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

4.5.9 Video BIOS Cacheable

The Setting Enabled allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

4.5.10 Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. The choices are Enabled and Disabled.

4.5.11 Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select "Enabled" to support compliance with PCI specification version 2.1.

4.5.12 Delay Prior to Thermal

This field activates the CPU thermal function after the system boots for a set number of minutes. The options are 16 Min and 64 Min.

4.5.13 AGP Aperture Size (MB)

This field sets the aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address

space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The default setting is 64 M.

4.5.14 On-Chip VGA

The default setting is Enabled.

4.5.15 On-Chip Frame Buffer Size

The default setting is 32 MB. The options available include 1MB, 4 MB, 8 MB and 16 MB.

4.5.16 Boot Display

The default setting is VBIOS Default to allow system to detect the connected display device automatically. The options available include VBIOS-Default, CRT, LVDS, CRT+LVDS.

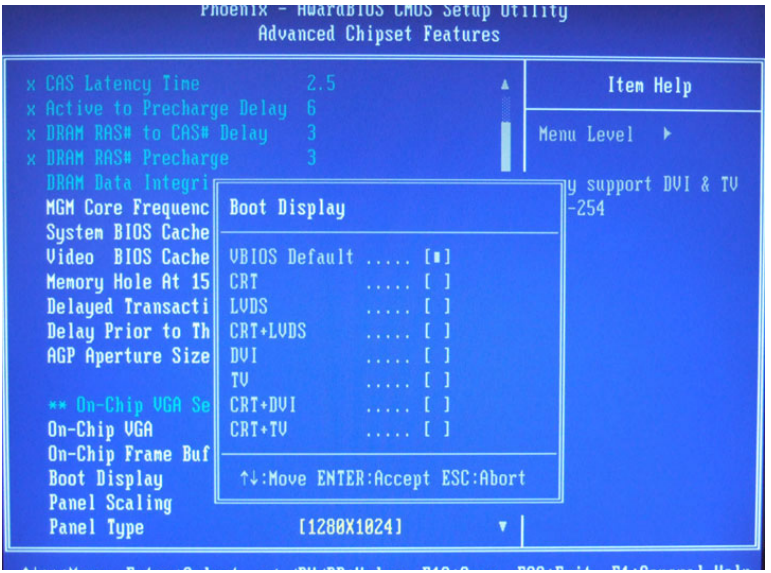


Figure 4.5: Boot Display

4.5.17 Panel Scaling

The default setting is Auto. The options available include On and Off.

4.5.18 Panel Type

These fields allow you to select the resolution of the LCD panel type. The resolution values for these ports are:

640 x 480

800 x 600

1024 x 768

1280 x 1024

1600 x 1200

The default setting is 1280x1024

4.6 Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows three main items for the user to select. Once an item selected, a submenu appears:

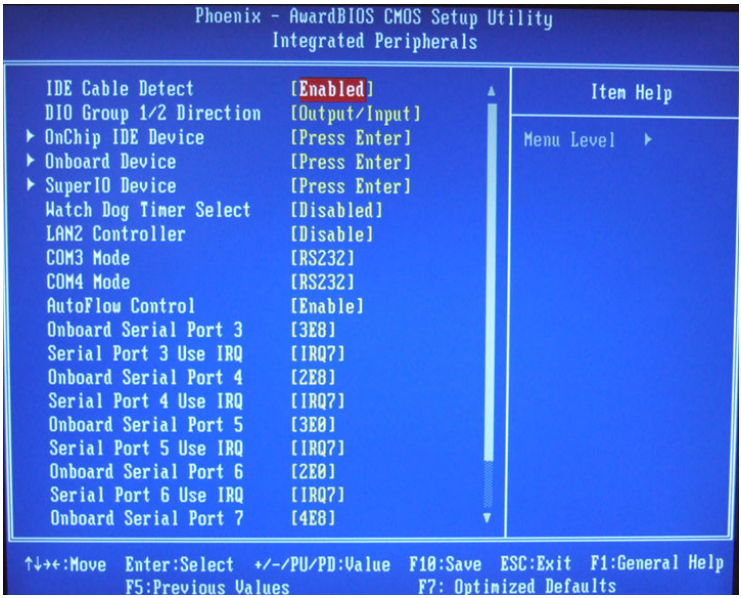


Figure 4.6: Integrated Peripherals

4.6.1 IDE Cable Detect

Some UDMA cables use a hole in the ribbon cable as a cable detection mechanism to determine if a UDMA IDE or standard IDE cable is installed. The default setting is “Enabled”.

4.6.2 On Chip IDE Device

Move the cursor to this field and press <Enter>. The following screen will appear.

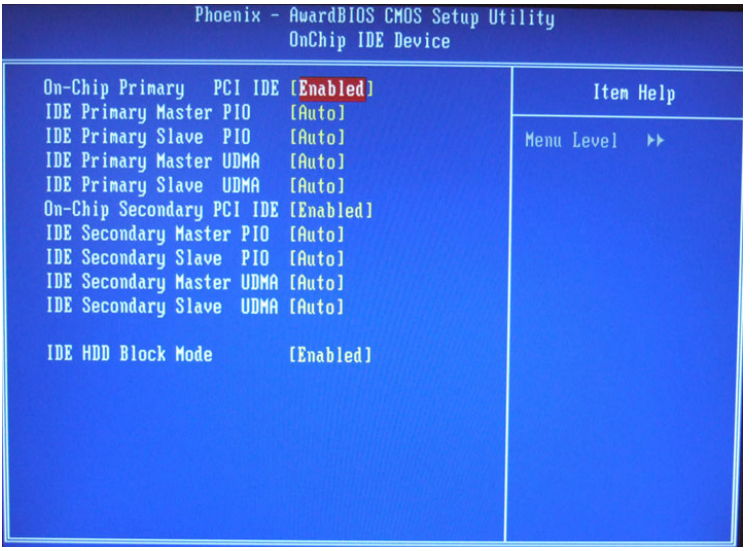


Figure 4.7: OnChip IDE Device

4.6.3 On-Chip Primary PCI IDE and On-Chip Secondary PCI IDE

These fields allow you to enable or disable the primary and secondary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

4.6.4 IDE Primary Master/Slave PIO and IDE Secondary Master PIO

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to affect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by itself. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

Auto: The BIOS will automatically set the system according to your hard disk drive's timing. Mode 0-4 You can select a mode that matches your hard disk

Mode 0-4: You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

4.6.5 IDE Primary Master/Slave UDMA and IDE Secondary Master UDMA

These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

Auto: The BIOS will automatically detect the settings for you.

Disabled: The BIOS will not detect these categories.

4.6.6 IDE HDD Block Mode

Enabled: The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

Disabled: The IDE HDD uses the standard mode.

4.6.7 Onboard Device

Move the cursor to this field and press <Enter>. The following screen will appear.

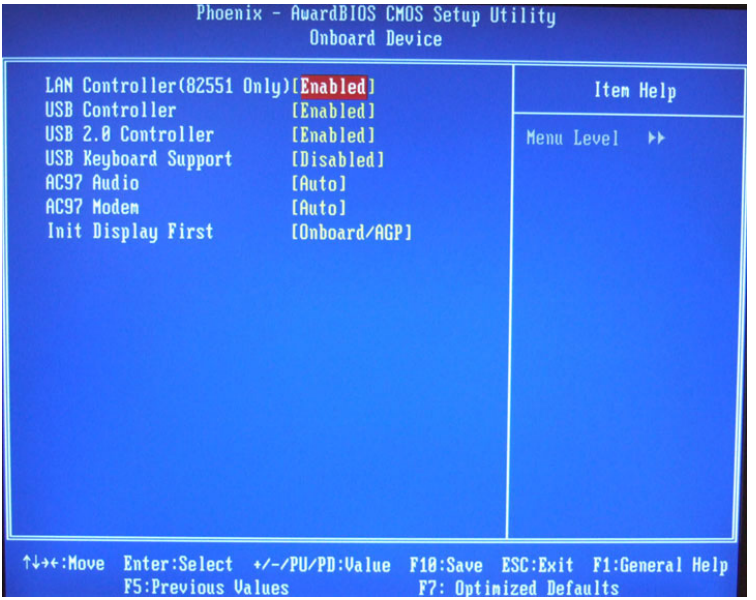


Figure 4.8: On Board Device

4.6.8 LAN Controller (82551 Only)

This field is used to enable or disable the Intel 82551 LAN controller.

4.6.9 USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The choices: Enabled, Disabled.

4.6.10 USB 2.0 Controller

If you are using USB 2.0, this field must be set to Enabled.

4.6.11 USB Keyboard Support

Select Enabled if user plan to use an USB keyboard under DOS. The choices are: Enabled, Disable.

4.6.12 s aAC97 Audio

Select Disable if you do not want to use AC-97 audio. Option is Auto, Disable.

4.6.13 Init Display First

This item allows you to choose which one to activate first, PCI Slot or on-chip VGA. The choices: PCI Slot, Onboard/AGP.

4.6.14 Super IO Device

Move the cursor to this field and press <Enter>. The following screen will appear.

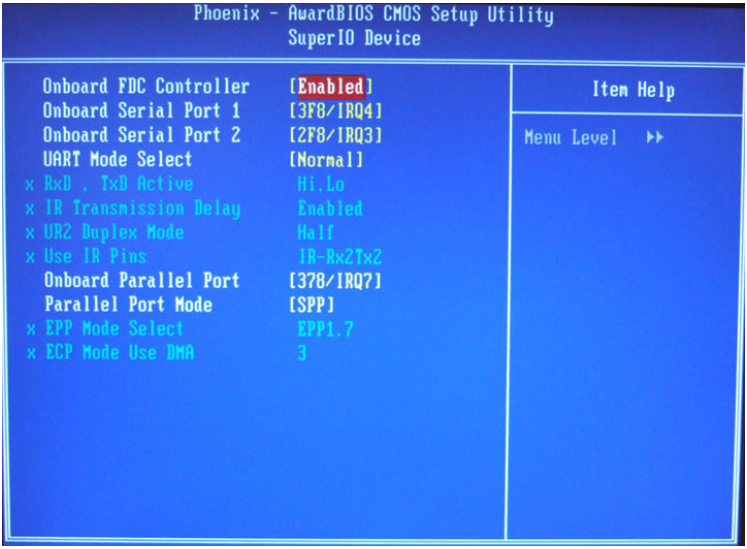


Figure 4.9: Super IO Device

The screen shown above lists all the fields available in the "Super IO Device" submenu. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

4.6.15 Onboard FDC Controller

When enabled, this field allows you to connect your floppy disk drives to the onboard floppy disk drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy disk drives, set this field to Disabled. Note: ARK-3383 series embedded box computer does not support FDC interface connection.

4.6.16 Onboard Serial Port 1

You can disable the COM 1 serial port by selecting “Disabled”, select the “Auto” to allow BIOS to arrange the suitable resource value for your COM1 device connection automatically, or you can select the resource of IRQ/IO Address combination for your COM 1 serial port device connection. The optional setup values are:

Disabled

3F8/IRQ4

2FB/IRQ3

3E8/IRQ4

2E8/IRQ3

Auto

The default setup value of COM 1 (Onboard Serial Port 1) is “3F8/IRQ4”.

4.6.17 Onboard Serial Port 2

You can disable the COM 2 serial port by selecting “Disabled”, select “Auto” to allow BIOS to arrange the suitable resource value for your COM 2 device connection automatically, or you can select the resource of IRQ/IO Address combination for your COM 1 serial port device connection. The optional setup values are:

Disabled

3F8/IRQ4

2FB/IRQ3

3E8/IRQ4

2E8/IRQ3

Auto

The default setup value of COM 2 (Onboard Serial Port 2) is “2F8/IRQ3”.

4.6.18 Watchdog Timer Select

This field allows you to set the timing duration when any unexpected program cause a halt, the Watch-Dog Timer will automatically reset the CPU or generate an interrupt. The Watch-Dog is designed with hardware only and doesn’t need any arithmetical functions of a real-time clock chip, this ensures reliability in an unmanned or standalone system. The setup options are “Disabled, “10 Sec”, “20 Sec”, “30 Sec”, “40 Sec”, “1 Min”, “2 Min”, and “4 Min”.

The default setup value is “Disabled”

4.6.19 COM 3 Mode Select

This field allows you to set the functional mode of COM 3, the setup options are RS-232, RS-422, or RS-485. The default setup value is RS-232.

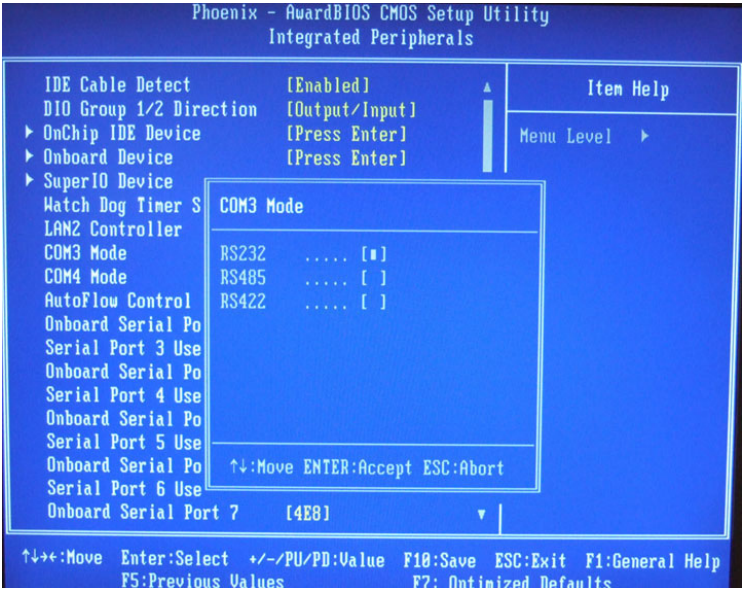


Figure 4.10: COM3 Mode Select

4.6.20 COM 4 Mode Select

This field allows you to set the functional mode of COM 4, the setup options are RS-232, RS-422, or RS-485. The default setup value is RS-232.

4.6.21 Onboard Serial Port 3/4

The field allow you to set the I/O addresses for COM3 (Onboard Serial Port 3), COM4 (Onboard Serial Port 4),. The setup options are “Disabled”, “4F8”, “4E8”, “3E8”, “2E8”, “3E0”, “2E0”. Leave this field on the default setting.

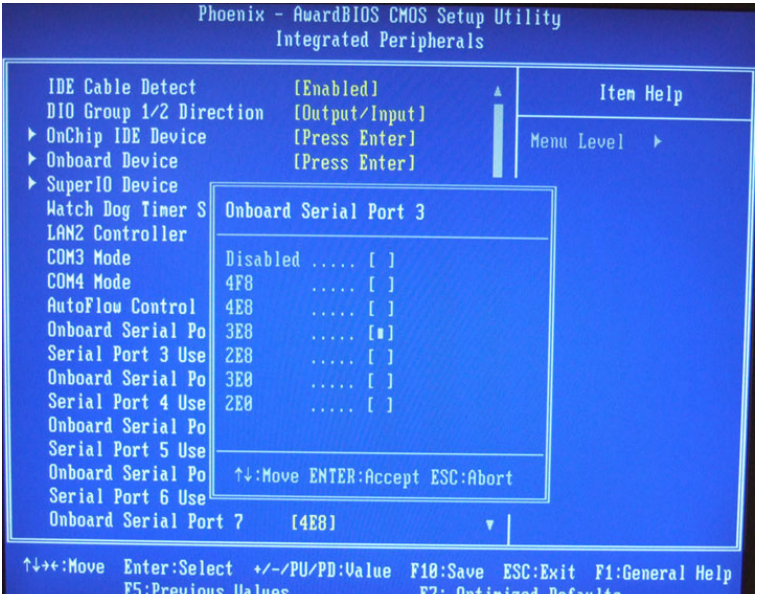


Figure 4.11: Onboard Serial Port 3

4.6.22 Serial Port 3/4 Use IRQ

The field allow you to set the interrupt resource of IRQ for COM 3 (Onboard Serial Port 3), and COM 4 (Onboard Serial Port 4). The Setup options are “IRQ3”, “IRQ4”, “IRQ5”, “IRQ6”, “IRQ7”, “IRQ10”, “IRQ11”, and “IRQ12”. Leave this field on the default setting.

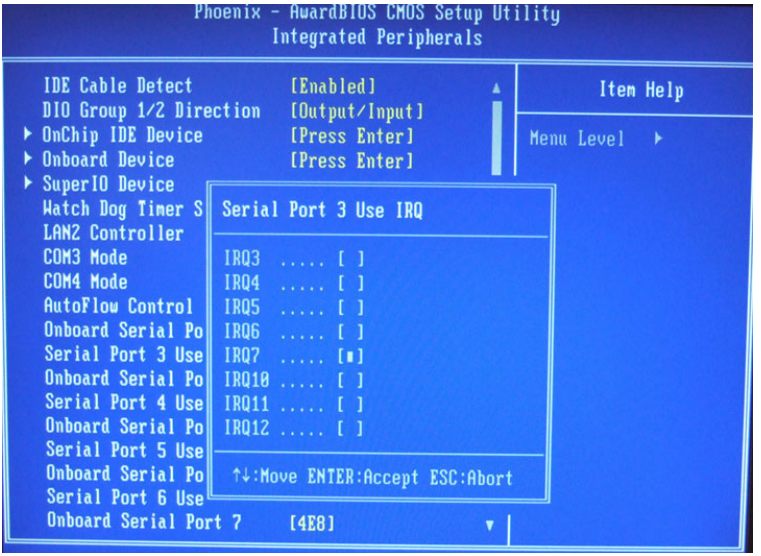


Figure 4.12: Serial Port 3 Use IRQ

4.7 Power Management Setup

The power management setup controls the CPU card's "green" features to save power. The following screen shows the manufacturer's defaults:

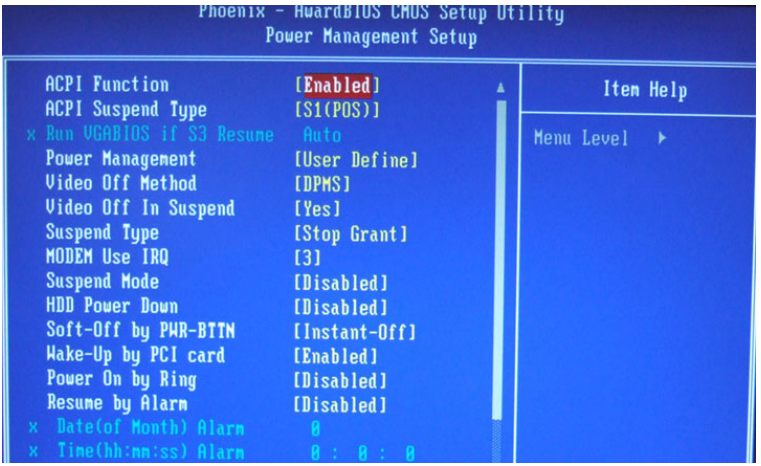


Figure 4.13: Power management setup screen

4.7.1 ACPI function

The choice: Enabled, Disabled.

4.7.2 ACPI Suspend Type

This field is used to select the type of Suspend mode. The setup options are:

S1(POS) Enables the Power On Suspend function.

S3(STR) Enables the Suspend to RAM function.

4.7.3 Run VGABIOS if S3 Resume

When this field is set to Auto, the system will initialize the VGA BIOS when it wakes up from the S3 state. This can be configured only if the "ACPI Suspend Type" field is set to "S3(STR)" or "S1&S3" The setup options are "Auto", "Yes", and "No". The default setup value is "Auto".

4.7.4 Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings

Min. Power Saving Power Saving	Minimum power management., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined (Default)	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min., and disable.

4.7.5 Video Off In Suspend

When the system is in suspend, video will turn off.

4.7.6 Video Off in Suspend

This field is used to activate the video off feature when the system enters Suspend mode.

4.7.7 Suspend Type

The options are “Stop Grant” and “PwrOn Suspend”.

4.7.8 Modem Use IRQ

This determines the IRQ in which the MODEM can use. The setup options are: “3”, “4”, “5”, “7”, “9”, “10”, “11”, “NA”. The default setup value is “3”

4.7.9 Suspend Mode

When the system enters Suspend mode, the CPU and onboard peripherals will be shut off. When enabled, and after a set time of system inactivity, all devices except the CPU will be shut off.

4.7.10 HDD Power Down

You can choose to turn the HDD off after one of the time intervals listed, or when the system is in “suspend” mode. If the HDD is in a power saving mode, any access to it will wake it up.

4.7.11 Soft-Off by PWR-BTTN

If you choose “Instant-Off”, then pushing the ATX soft power switch button once will switch the system to “system off” power mode. You can choose “Delay 4 sec.” If you do, then pushing the button for more than 4 seconds will turn off the system, whereas pushing the button momentarily (for less than 4 seconds) will switch the system to “suspend” mode.

4.7.12 Wake-Up by PCI card

Enabled This field should be set to Enabled only if your PCI card such as LAN card or modem card uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card or PCI card will cause the system to wake up. Refer to the card’s documentation for more information.

Disabled The system will not wake up despite access to the PCI card

4.7.13 Power On By Ring

Set this field to Enabled to use the modem ring-on function. This will allow your system to power-on to respond to calls coming from an external modem.

4.7.14 PowerOn By Alarm

When Enabled, you can set the date and time at which the RTC (real time clock) alarm awakens the system from Suspend mode. The choices: Enabled, Disabled.

Enabled When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Date (of Month) Alarm" and "Time (hh:mm:ss) Alarm" fields. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the date and time set in these fields, the system will give priority to the incoming calls or network.

Disabled Disables the automatic power-on function. (default)

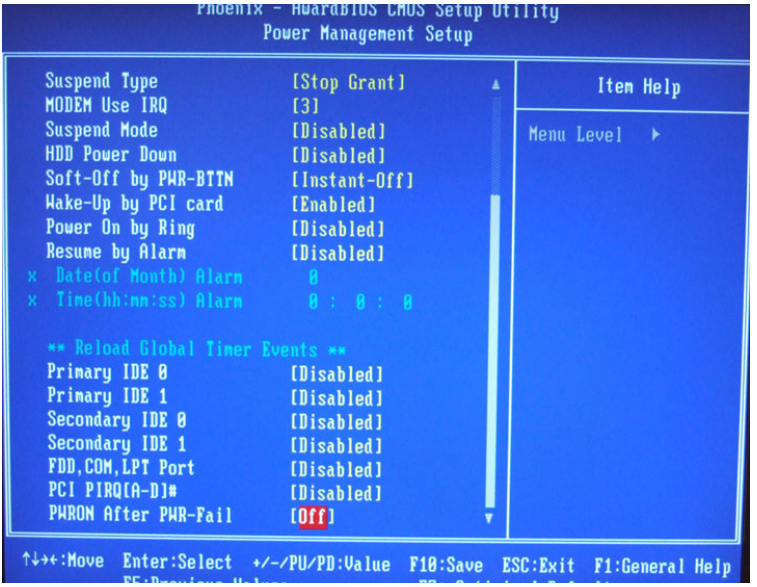


Figure 4.14: Power Management Setup

4.7.15 Date (of Month) Alarm

0 The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.

1-31 Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

4.7.16 Time (hh:mm:ss) Alarm

This is used to set the time you would like the system to power-on. If you want the system to power-on everyday as set in the "Date (of Month) Alarm" field, the time set in this field must be later than the time of the RTC set in the Standard CMOS Features submenu.

4.7.17 Primary IDE 0/ 1 and Secondary IDE 0 / 1

When Enabled, the system will resume from suspend mode if Primary IDE 0 / 1 or Secondary IDE 0 / 1 is active. The choice: Enabled, Disabled.

4.7.18 FDD, COM, LPT PORT

When Enabled, the system will resume from suspend mode if FDD, COM port, or LPT port is active. The choice: Enabled, Disabled.

4.7.19 PCI PIRQ [A-D]#

When Enabled, the system will resume from suspend mode if an interrupt occurs. The choice: Enabled, Disabled.

4.7.20 PWRON After PWR-Fail

Off When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

On When power returns after an AC power failure, the system will automatically power-on

Former-Sts When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power on when power returns.

4.8 PnP/PCI Configurations

This section shows how to configure the PCI bus system. It covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

4.8.1 Reset Configuration Data

Default is Disable. Select Enable to reset Extended System Configuration Data (ESCD) if you have installed a new add-on and system configuration has caused such a conflict that OS cannot boot.

Enabled The BIOS will reset the Extended System Configuration Data (ESCD) once automatically. It will then recreate a new set of configuration data.

Disabled The BIOS will not reset the configuration data.

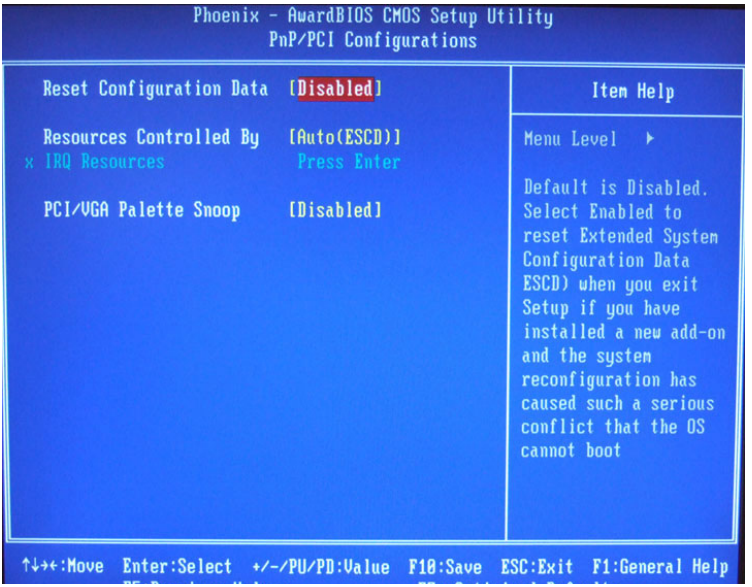


Figure 4.15: PnP/PCI configurations screen

4.8.2 Resources controlled by

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

Auto(ESCD) The system will automatically detect the settings for you.

Manual Choose the specific IRQ resources in the “IRQ Resources” field.

4.8.3 IRQ Resources

Move the cursor to this field and press <Enter>. The “IRQ-3” to “IRQ-15” fields will appear. Set each system interrupt to either PCI Device or Reserved.

4.8.4 PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not. The default value is Disabled.

Enabled MPEG ISA/VESA VGA cards work with PCI/VGA.

Disabled MPEG ISA/VESA VGA cards does not work with PCI/VGA.

4.9 Frequency/Voltage Control

This section shows the user how to configure the processor frequency.

4.9.1 Auto Detect PCI CLK

This field enables or disables the auto detection of the PCI clock.

4.9.2 Spread Spectrum

This field sets the value of the spread spectrum. The default setting is Disabled. Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.

4.9.3 CPU Host/3V66/PCI Clock

Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.

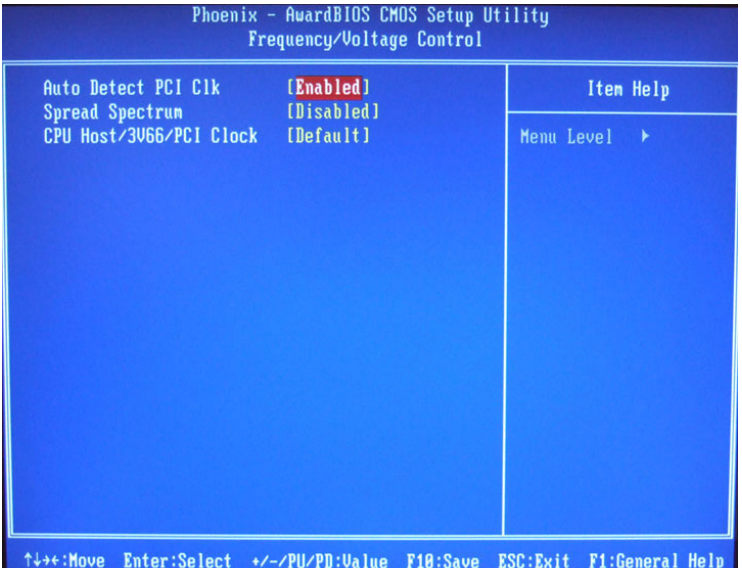


Figure 4.16: Frequency/Voltage Control

4.9.4 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

4.9.5 Set Password

To change the password:

1. Choose the “Set Password” option from the “Initial Setup Screen” menu and press <Enter>.

The screen will display the following message:

Please Enter Your Password

Press <Enter>.

2. If the CMOS is good or if this option has been used to change the default password, the user is asked for the password stored in the CMOS.

The screen will display the following message:

Please Confirm Your Password

Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password must be no longer than eight (8) characters.

Remember, to enable the password setting feature, you must first select either “Setup” or “System” from the “Advanced BIOS Features” menu.

4.9.6 Save & Exit Setup

If you select this and press <Enter>, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

4.9.7 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the setup program without recording any new values or changing old ones.

CHAPTER 5

SVGA/LCD Setup

This chapter details the display software configuration information. It shows you how to configure the VGA to match your application requirements.

Sections include:

- Introduction
- Installation of SVGA drivers for Windows 2000/XP
- Further information

Chapter 5 SVGA/LCD Setup

5.1 Introduction

The ARK-3383 has an onboard Intel 852GM/855GME chipset for its AGP/SVGA controller. It supports LVDS LCD displays and conventional analog CRT monitors with 64 MB frame buffer shared with system memory. The VGA controller can drive CRT displays with resolutions up to 1600 x 1200 @ 85 Hz and 2048 x 536 @ 75 Hz and supports 2 channel LVDS display mode up to UXGA panel resolution with frequency range from 25 MHz to 112 MHz

5.1.1 CMOS setting for Boot Display type

The ARK-3383 system BIOS and custom drivers are located in a 4 Mbit, Flash ROM device, designated U7 on the system motherboard of ARK-3383. A single Flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings, by choice the selection items of “Boot display” of Advanced Chipset Features sections of Award BIOS Setup.

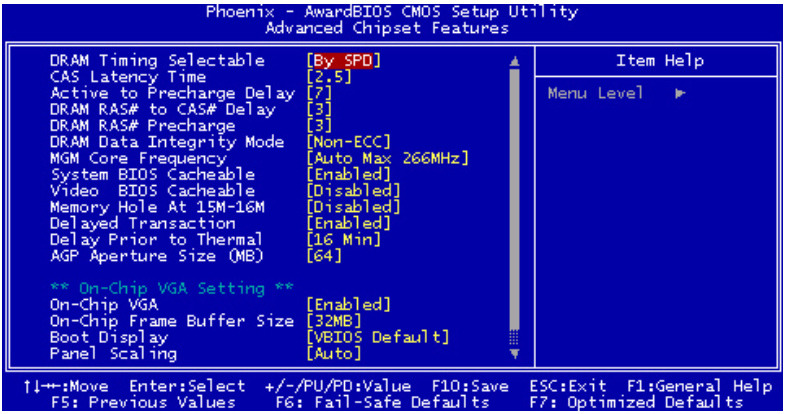


Figure 5.1: Advanced Chipset features screen

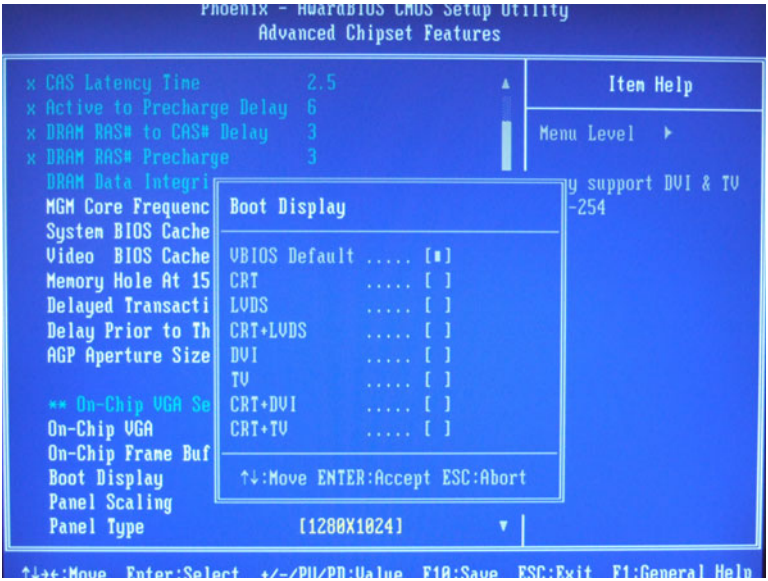


Figure 5.2: Boot Display Selection

The ARK-3383 can be set in one of four configurations: on a CRT, on a LVDS based flat panel display, or on both CRT+LVDS for simultaneous or dual independent displays. The system is initially set to “VBIOS-Default” to allow system to detect the connected display devices automatically.

5.1.2 Dual Independent Display

The ARK-3383 uses an Intel 855GME or Intel 852GM controller that is capable of providing multiple views and simultaneous displays with mixed video and graphics on a flat panel and CRT. To set up dual display under 2000/XP, please follow these steps:

1. Select “Start”, “Control panel”, “Display”, "Setting", "Advanced", "Graphics Properties", "Device".

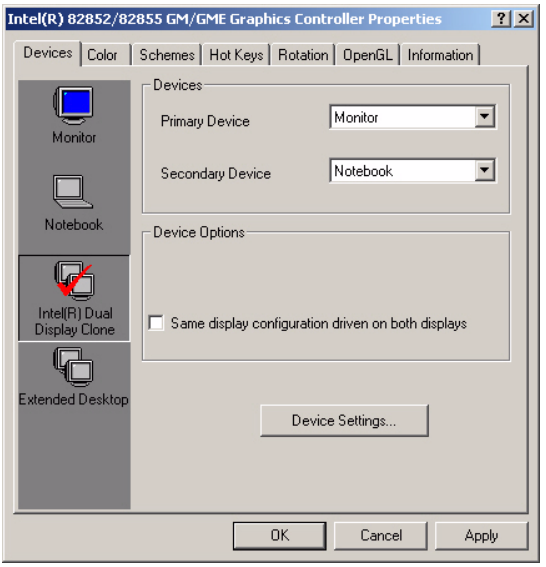


Figure 5.3: Intel® 82852/82855 GM/GME Graphics Controller Properties – Devices

2. Select “1” for current display, or “2” for second display.

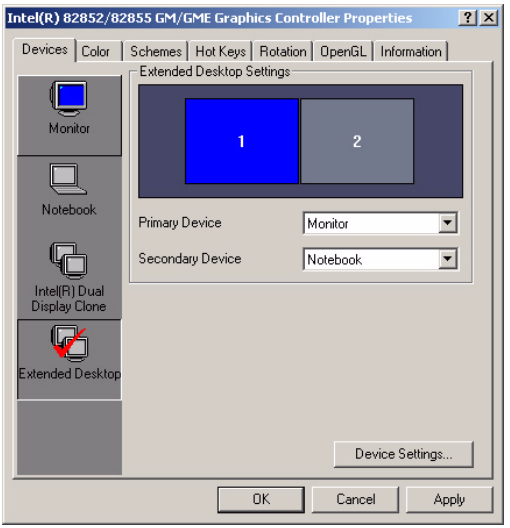


Figure 5.4:

Intel® 82852/82855 GM/GME Graphics Controller Properties – Extended Desktop Settings

3. Enable “Extend my Windows desktop onto this monitor”.

4. Click “OK”.

5.2 Installation of the SVGA Driver

Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your ARK-3383.

5.2.1 Installation for Windows 2000/XP

To install the SVGA driver for Window 2000/XP, please run the setup wizard “Intel Extreme Graphic 2” on the CD-ROM. An example installation is shown below:

1. You can find Win2000/XP VGA driver from the path at the directory of ARK-3383 CD-ROM:

D:\ARK-3383 Series Software Device Driver\2_VGA\win2k_xp141.exe, then double click “win2k_xp141” to run “Install Shield Wizard”

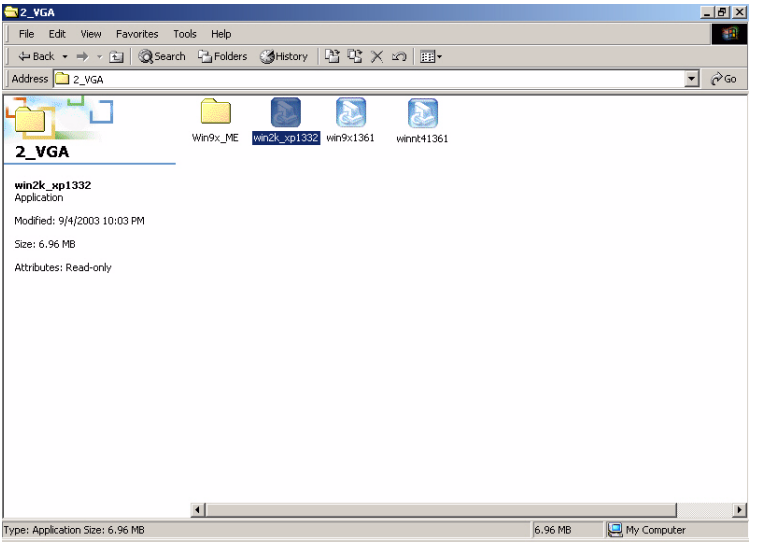


Figure 5.5: CD Directory “2.VGA”

Notes:

- The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.
- For convenience, the CD-ROM drive is designated as "D" throughout this chapter.

2. Double click "setup" and "next" into setup wizard.

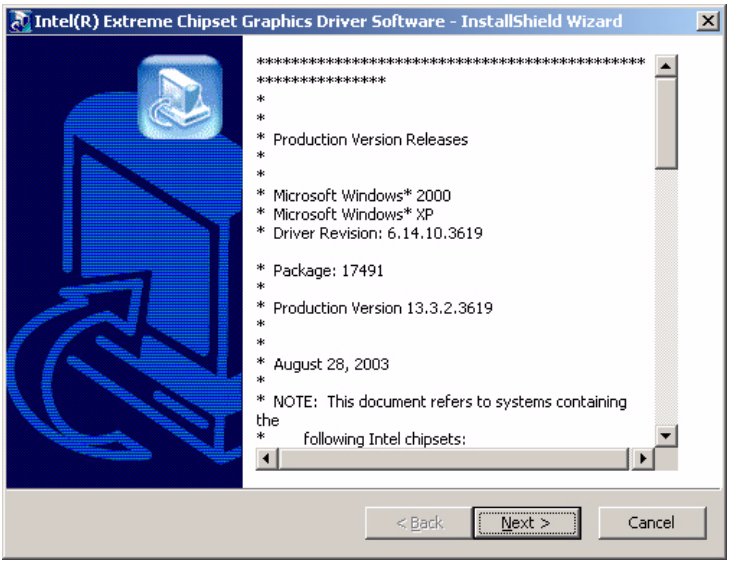


Figure 5.6: Intel® Extreme Chipset Graphics Driver Software Install Wizard

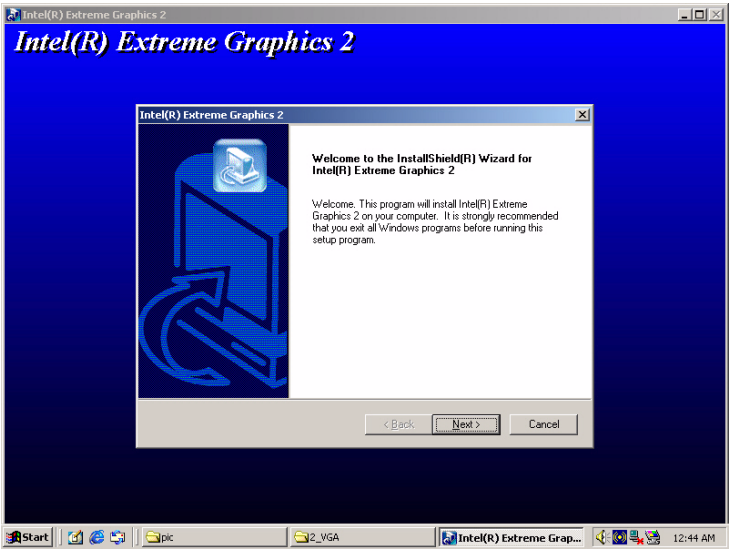


Figure 5.7: Intel® Extreme Graphics Driver Setup

3. Restart computer when installation has finished.

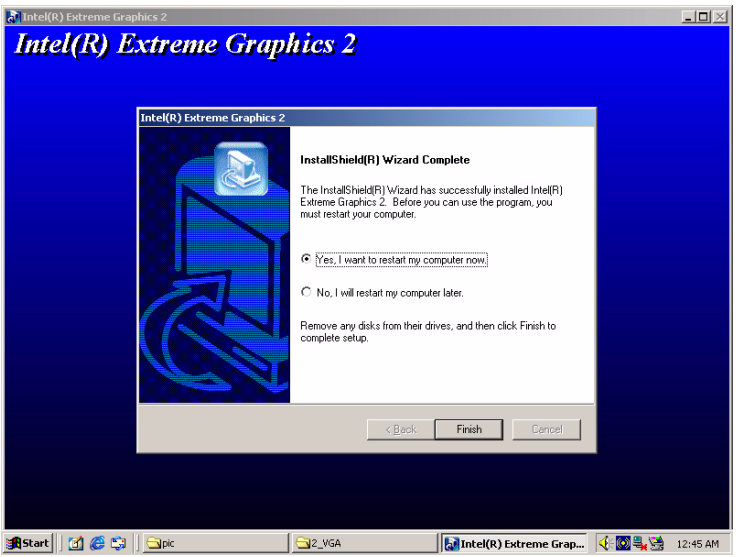


Figure 5.8: InstallShield® Wizard Complete

5.3 Further information

For further information about the AGP/VGA installation in your ARK-3383, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Intel website: www.intel.com

Advantech websites: www.advantech.com, or www.advantech.com.tw

CHAPTER 6

Audio Setup

Chapter 6 Audio Setup

6.1 Introduction

The ARK-3383's audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the Intel ICH4 audio controller. The audio interface can record, compress, and play back voice, sound, and music with built-in mixer control.

6.2 Driver installation

6.2.1 Before you begin

Please read the instructions in this chapter carefully before you attempt installation. The audio drivers for the ARK-3383 board are located on the audio driver CD. Run the supplied SETUP program to install the drivers; don't copy the files manually.

Note: The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.

6.2.2 Windows 2000/XP drivers

1. Find Win 2000/XP Audio driver folder at the directory "5_Audio" from the Driver & Utility CD-ROM disk, click "setup" to start the installation process.

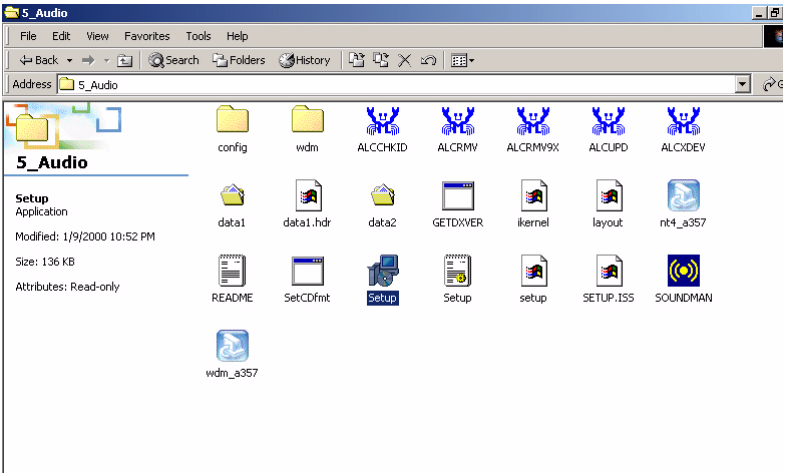


Figure 6.1: Directory of Audio Driver

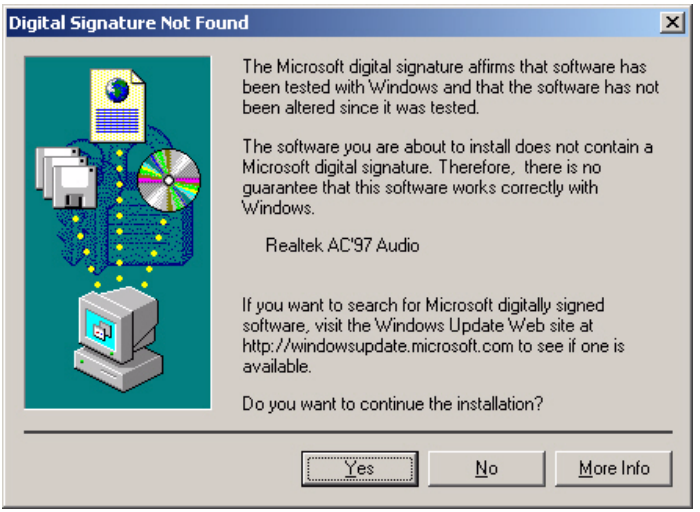


Figure 6.2: AC97 Audio Driver Installation

2. Click "yes" to reboot your computer.

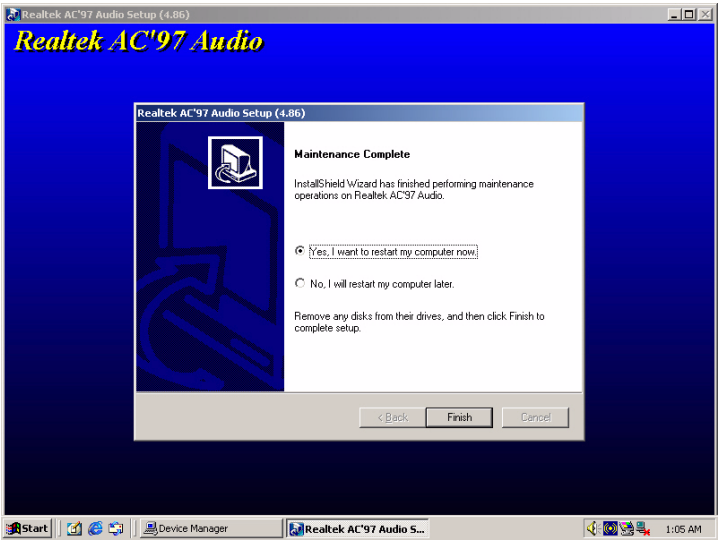


Figure 6.3: Installation Complete of AC97 Audio Driver

CHAPTER 7

Ethernet Interface

This chapter provides information on Ethernet configuration.

Sections include:

- Introduction
- Installation of Ethernet drivers for Windows 2000/XP
- Further information

Chapter 7 Ethernet Interface

7.1 Introduction

The ARK-3383 is equipped with dual high performance 32-bit Ethernet chipsets which are fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. They are supported by major network operating systems. They are also both 100Base-T and 10Base-T compatible. The network boot feature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

7.2 Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your ARK-3383 series, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or Windows.

7.2.1 Installation for Windows 2000/XP

1. Select "Start", "Settings". "Control Panel".

Note: The windows illustrations in this chapter are examples only. Follow the steps and pay attention to the instructions which appear on your screen.

2. Double click "Add/Remove Hardware".

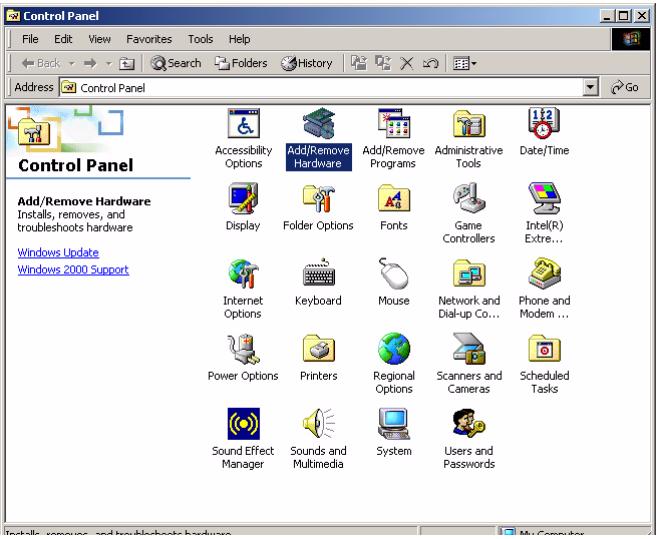


Figure 7.1: Windows Control Panel Screen

3. Click “Next” and prepare to install the network function

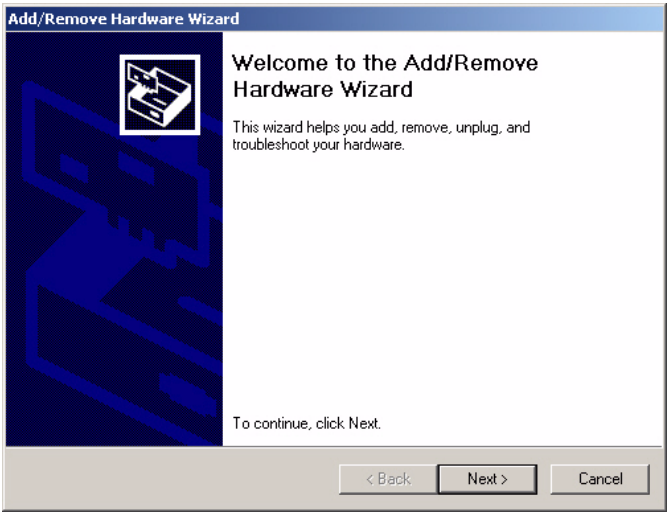


Figure 7.2: Add/Remove Hardware Wizard

4. Choose “Add/Troubleshoot a device” and click “Next”.

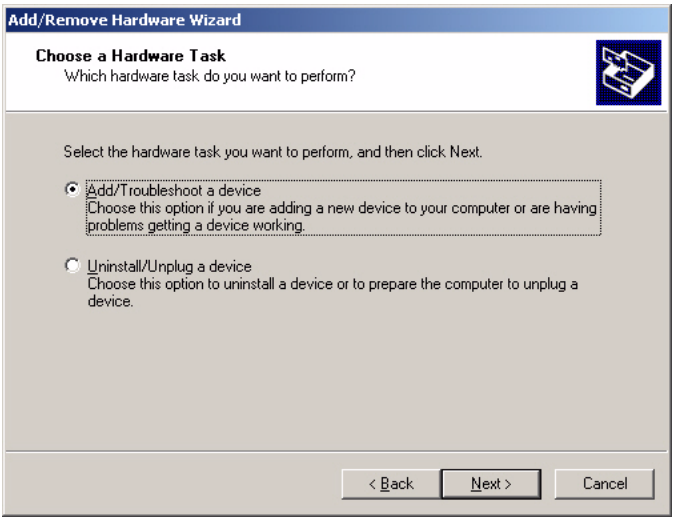


Figure 7.3: Choose a Hardware Task Screen

5. Choose Hardware Device "Ethernet Controller"

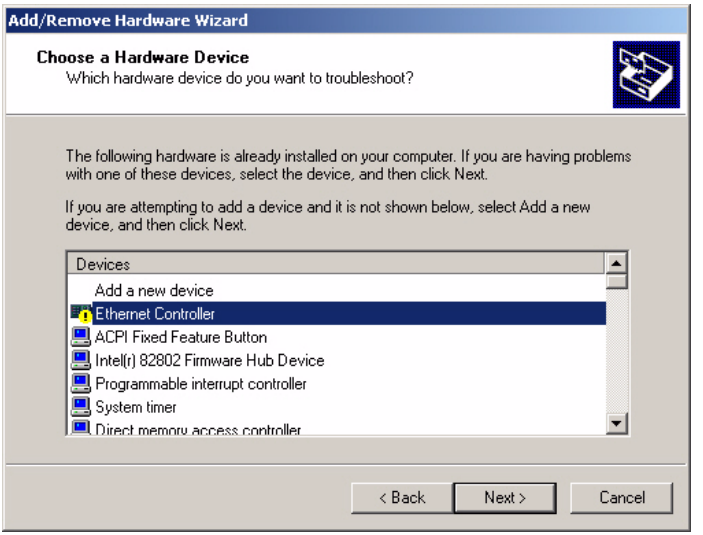


Figure 7.4: Choose a Hardware Device

Figure 7.5: Install Ethernet Controller Screen

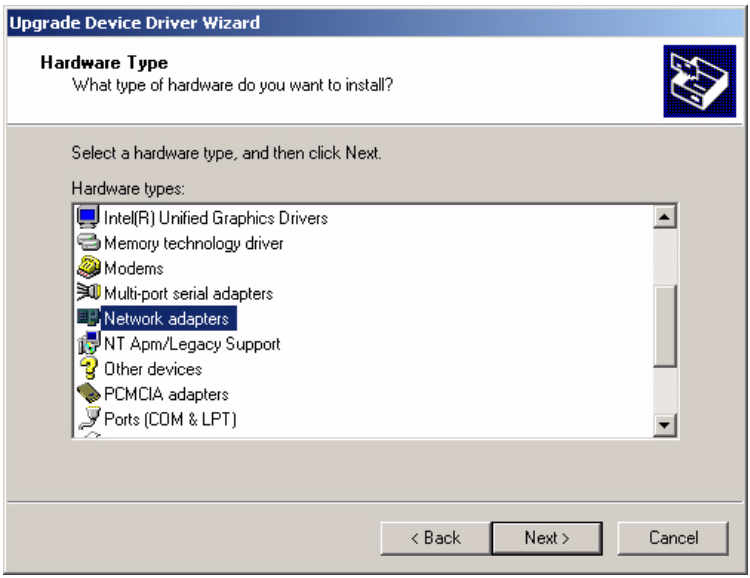


Figure 7.6: Hardware Type Screen

6. Insert the ARK-3383's Driver & Utility CD-ROM Disk into D: drive

   6-1. Find the driver of chipset folder "82551QM" at the directory of "D:\ARK-3383 Series Software Device Driver\3_LAN" from ARK-3383's Driver & Utility CD-ROM Disk.

   6-2. Click "OK".

Figure 7.7: Install From Disk Screen

7. Choose the "Intel 8255x-based PCI Ethernet Adapter (10/100)" item Click "Next"

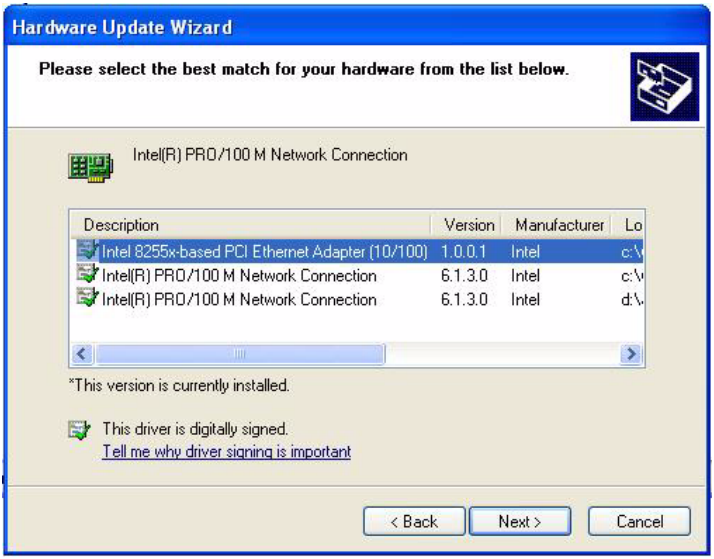


Figure 7.8: Network Adapter Selection Screen

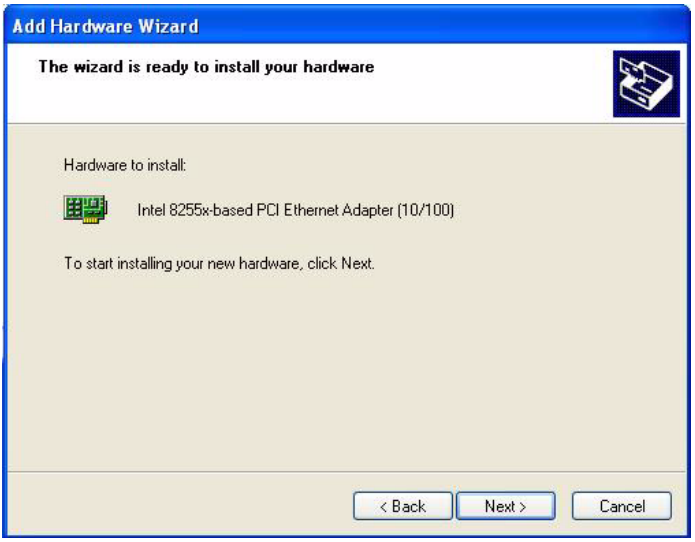


Figure 7.9: Start Device Driver Installation

8. Please wait while the wizard installs the software...

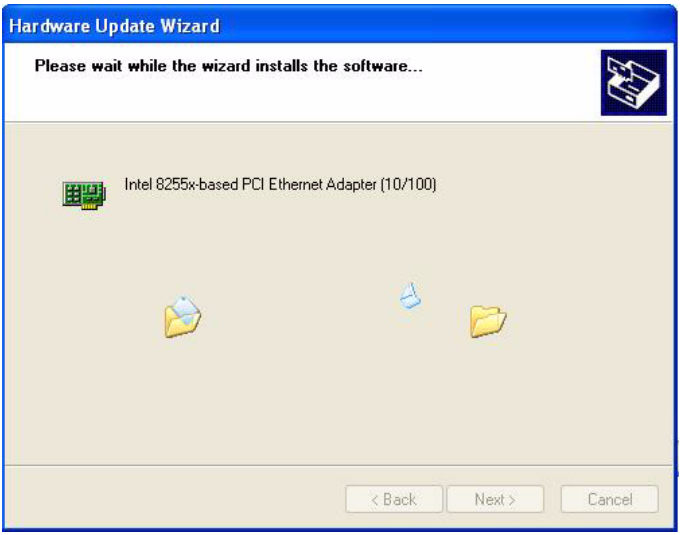


Figure 7.10: Intel Ethernet Adapter driver installation screen

9. Click "Finish"

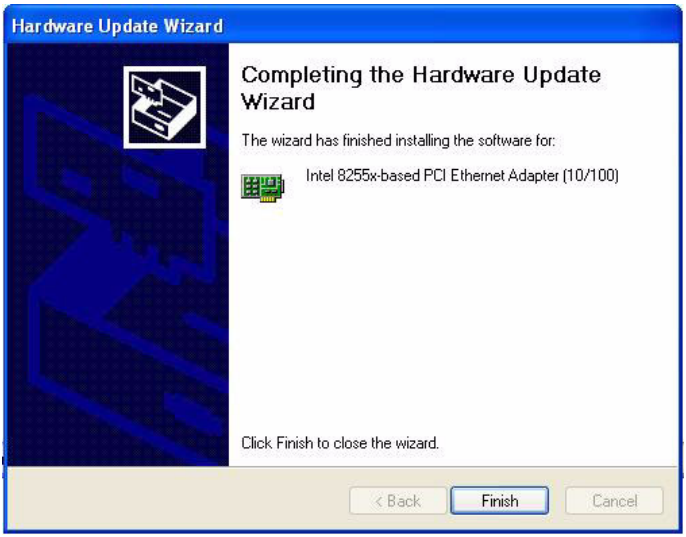


Figure 7.11: Intel Ethernet Adapter Driver Installation Complete Screen

CHAPTER 8

Full Disassembly Procedure

This chapter details the system disassembling procedure for setting up the jumpers and for maintenance.

Sections include:

Chapter 8 Full Disassembly Procedure

8.1 Introduction

If you want to completely disassemble the Embedded Box Computer, follow the step-by-step procedures below. Users should be aware that Advantech Co., Ltd. takes no responsibility whatsoever for any problems or damage caused by the user disassembly of the embedded box computer. Make sure the power cord of the embedded box computer is unplugged before you start disassembly. The following procedures do not include the detailed disassembly procedures for the HDD, Compact Flash Disk and SRAM; all of which can be found in Chapter 3.

1. Unscrew the 2 screws on the bottom side

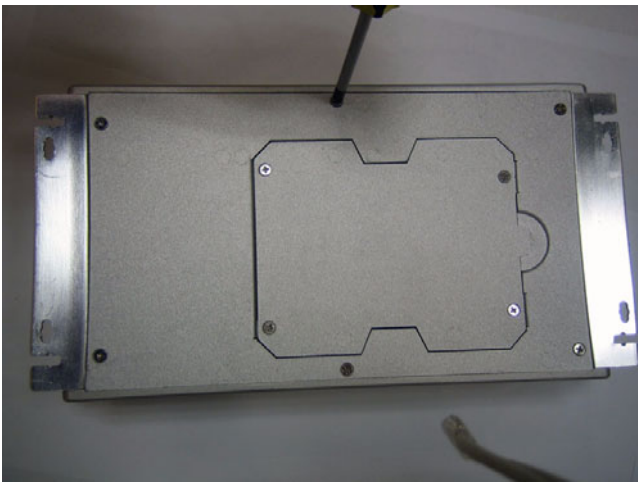


Figure 8.1:

2. Unscrew the screws of the frame bracket on the front side of system

Figure 8.2:

3. Remove the front frame bracket by carefully pulling and lifting the bracket in order to unlock it.

Figure 8.3:

4. The Front Frame Bracket removed

Figure 8.4:

5. Unscrew the 2 screws which are located on top of the Front Metal Faceplate

Figure 8.5:

6. Unscrew the 2 hexagonal bolts which are located on left side and right side of COM 2.

Figure 8.6:

7. The Front Metal Faceplate removed

Figure 8.7:

Warning: Do not use too much pressure when removing the front metal face plate as the power button cable is still attached and could be damaged.

8. Unscrew the 4 screws of the frame bracket on the rear side of system

Figure 8.8:

9. Remove the rear frame bracket by carefully pulling and lifting the bracket in order to unlock it

Figure 8.9:

10. Unscrew the 2 hexagonal bolts which are located on left side and right side of COM 3 and COM 4.

Figure 8.10:

11. Unscrew the 2 screws which are located on the rear metal faceplate

Figure 8.11:

12. The Rear Metal Faceplate Removed

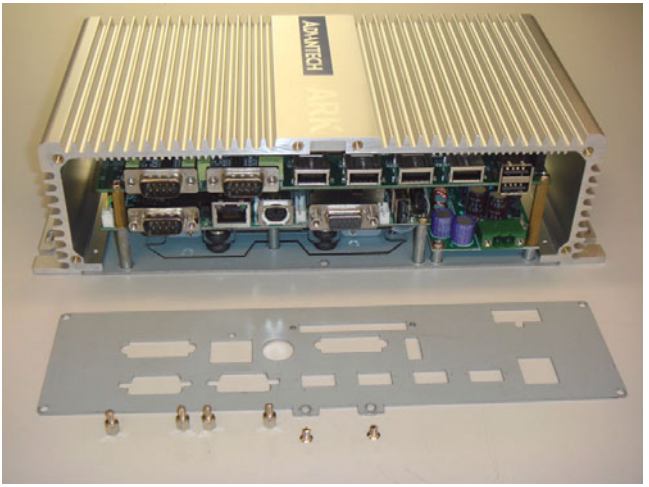


Figure 8.12:

13. The system after the top cover has been removed

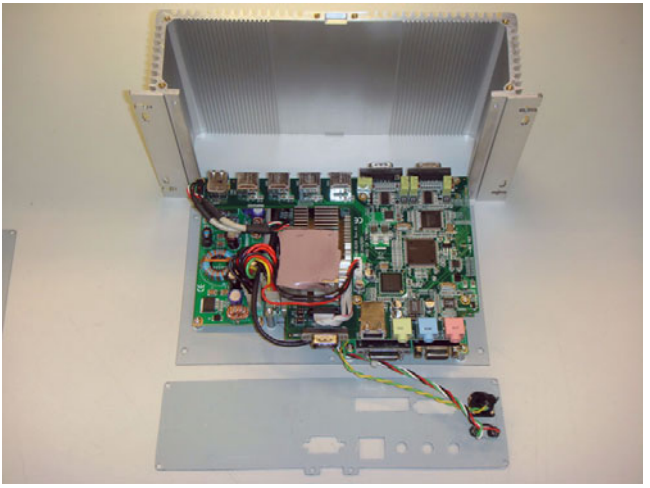


Figure 8.13:

14. Unscrew the 6 screws which fix the AM0-6260 Module I/O board to the system board.

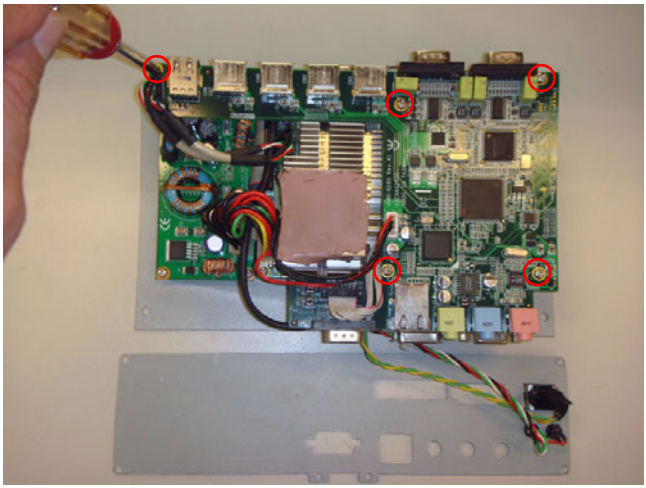


Figure 8.14:

15. Remove AM0-6260 Module I/O board from MIO Socket on the system board

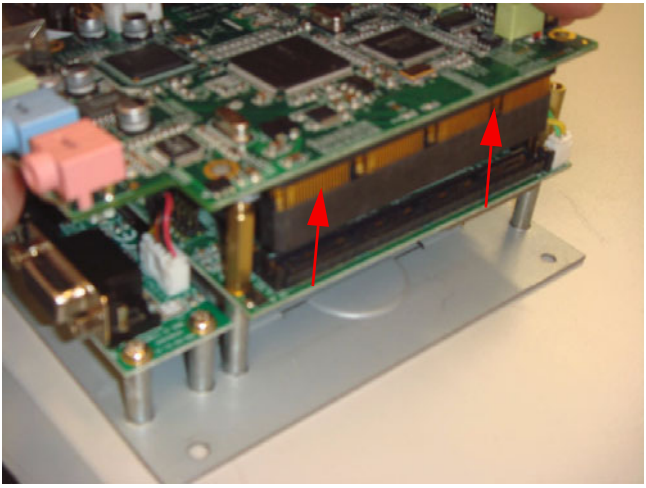


Figure 8.15:

16. The System after AMO-6260 Module I/O board has been removed

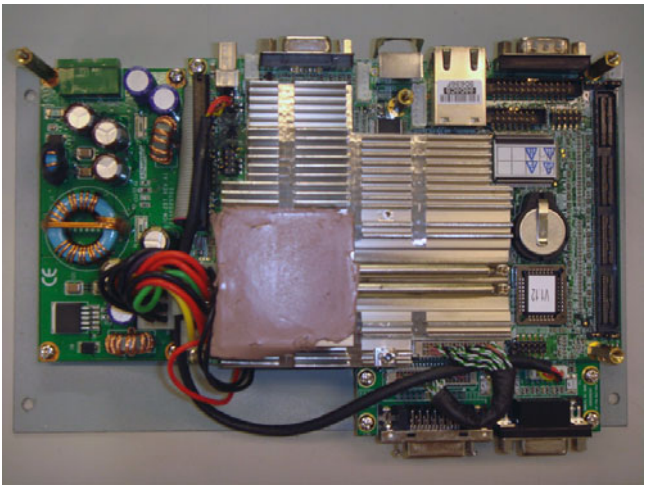


Figure 8.16:

17. Jumper Location on PCM-9380/PCM-9386 Motherboard

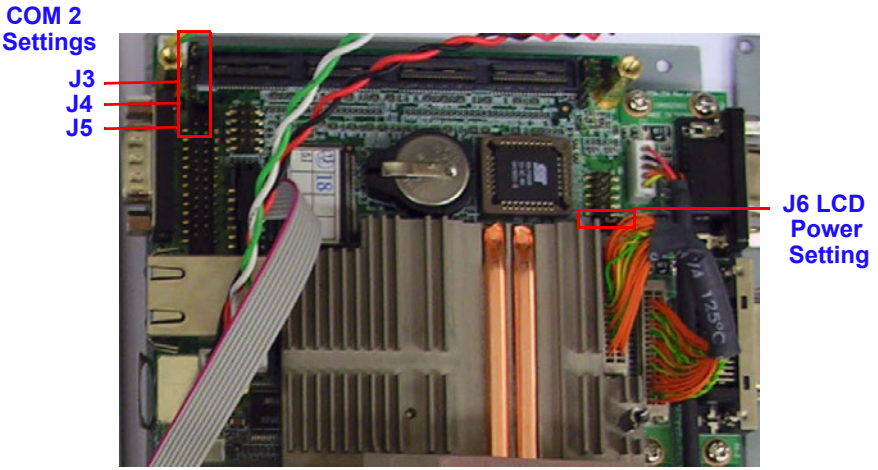


Figure 8.17: